CHNOLOGY DEPARTMENT

AVIATION WEEK

JAN. 5, 1948

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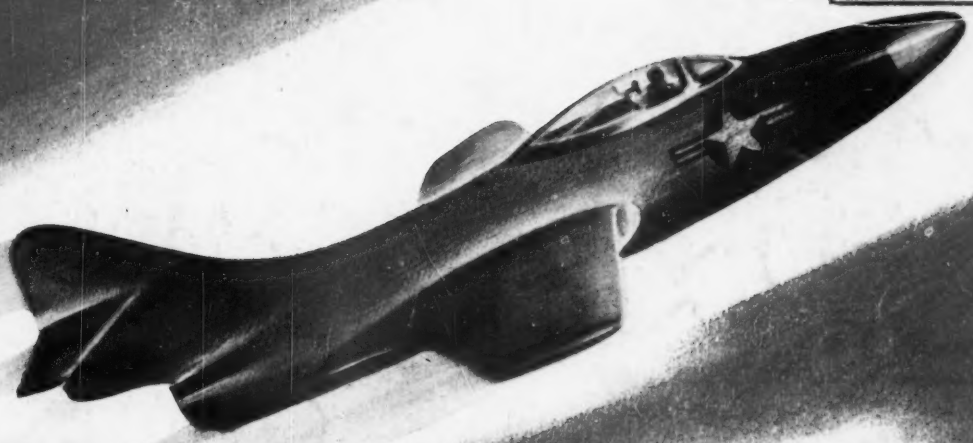

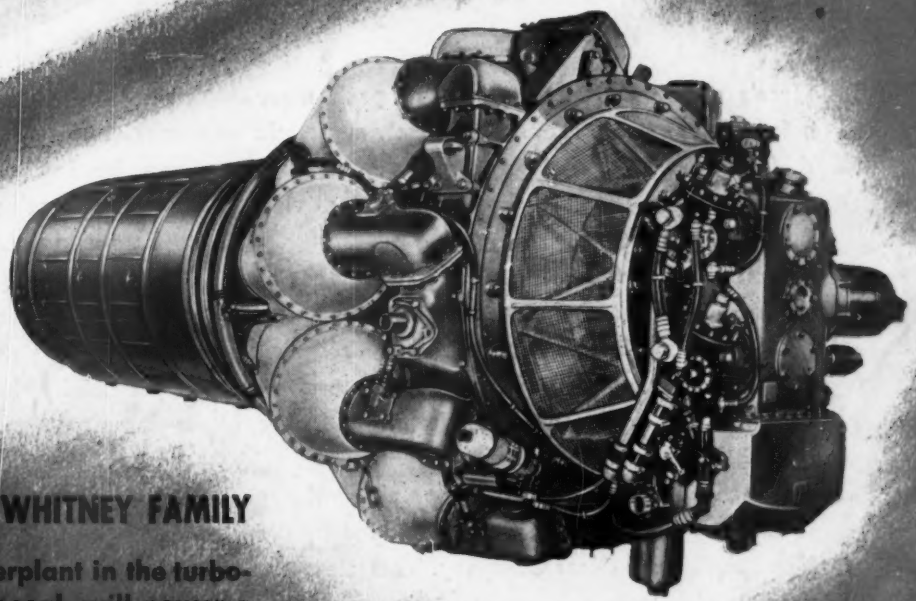

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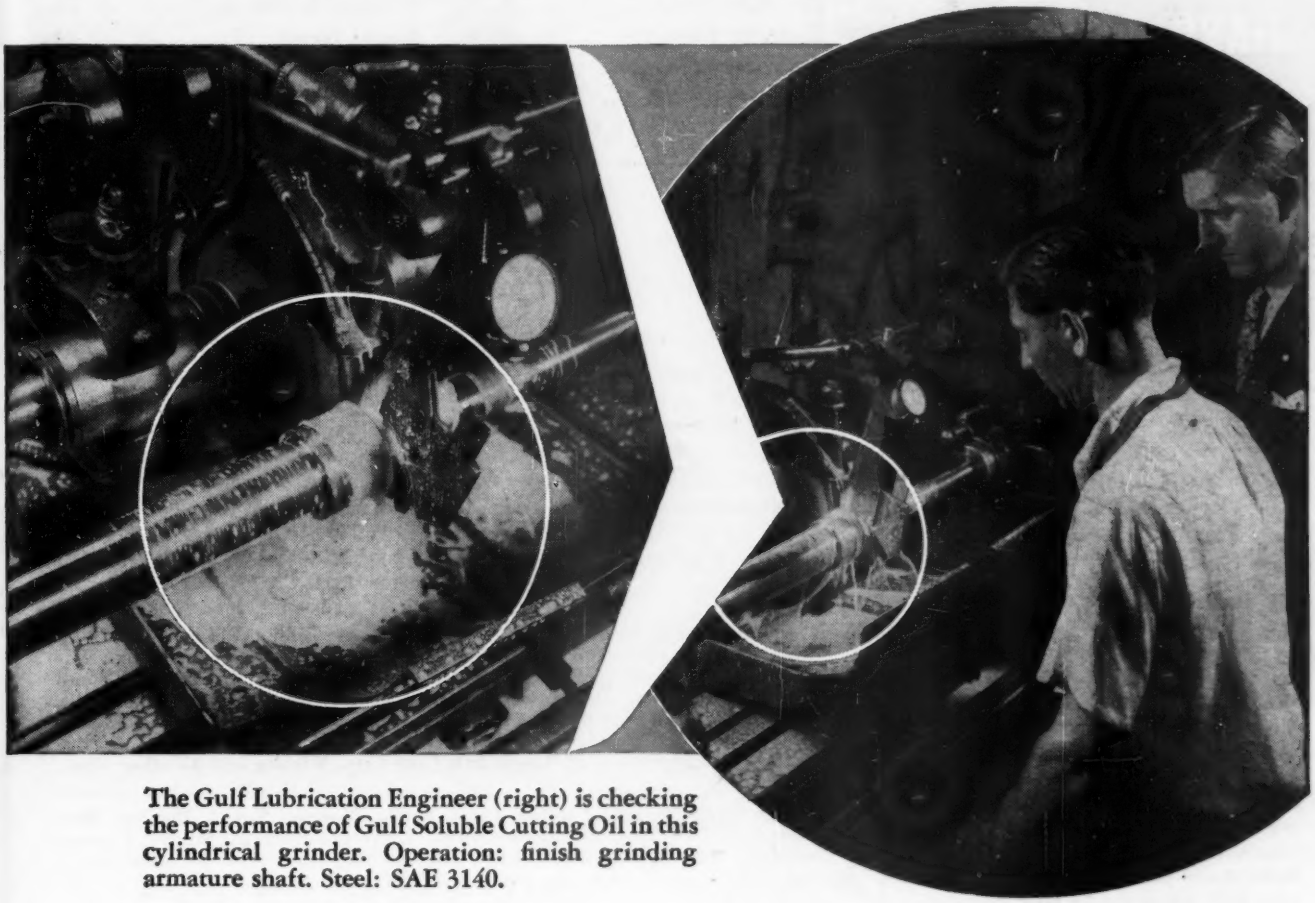

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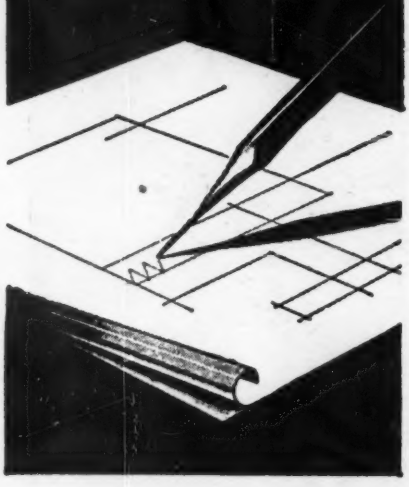

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AVIATION WEEK

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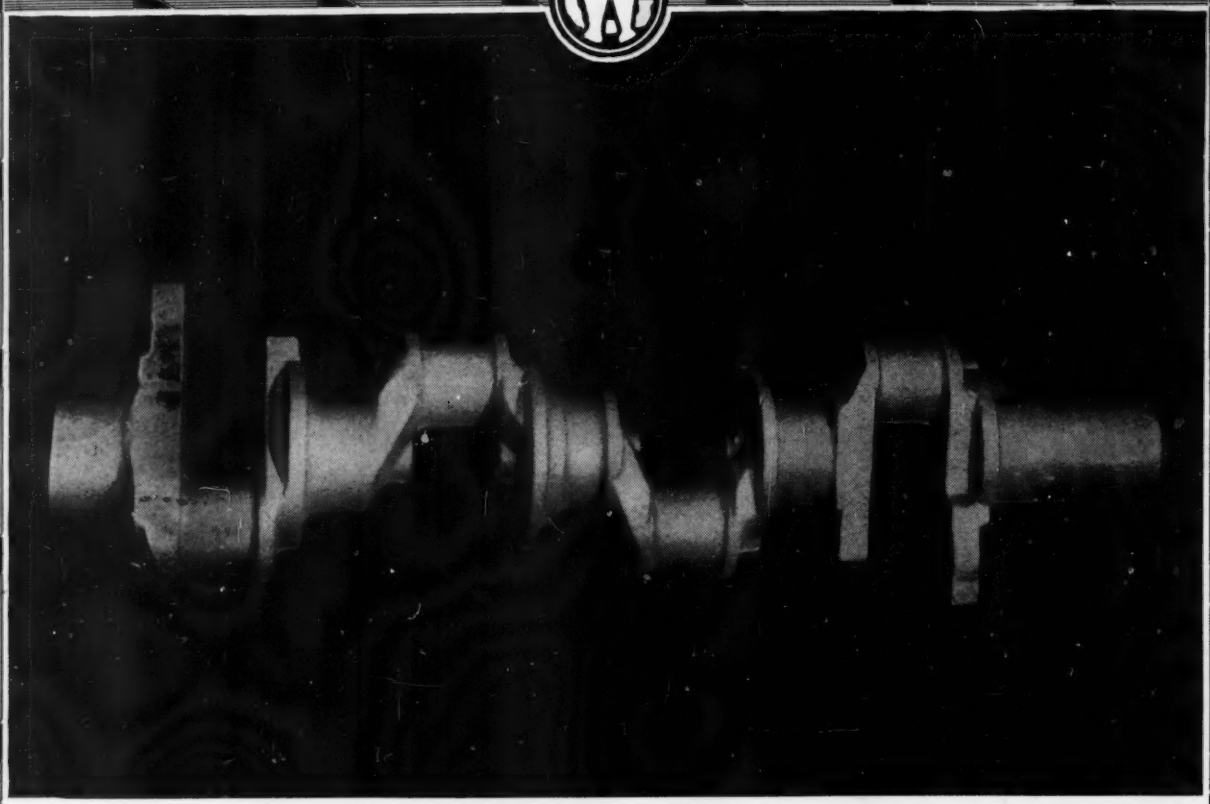

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PLANNING VS. PRODUCTION—Year-end announcements by the Air Force and the Navy of contracts for new aircraft present the interesting possibility that military thinking on industrial preparedness planning for aircraft manufacturers may have been sharply revised.

While there can be no grounds for a definite belief that any of the new contracts reflect abandonment of preliminary ideas of industrial preparedness formulated more than a year ago, they certainly point to a modification of those ideas. In a number of respects it would appear that the Air Force, in particular, has been forced by reasons of expediency to modify the original concept of industrial preparedness planning.

As far as the manufacturers' immediate financial situation is concerned, this could be an encouraging development.

The initial industrial preparedness program was based on the theory that it would not be possible in peacetime to maintain high levels of production in any type of aircraft. The alternative that then was presented was to plan for rapid expansion of production of several basic types. High volume tooling would be procured for these types, and the cost would be so high that it might preclude actual quantity production for some time to come.

Contracts as announced clash in some degree with that procedure. The hundreds of planes ordered from Republic, Lockheed, North American and Boeing obviously are to refurbish quickly the U. S. Air Force, with deliveries to begin on new types this summer. This dictates production rates high enough to make a certain amount of high volume tooling mandatory.

PLANES, NOT PLANS NEEDED—Before the President's Air Policy Commission, manufacturers and government officials stressed that the immediate need is for production of airplanes. While few disputed the principles of preparedness planning, they all inclined to the belief that planning is no answer in the present circumstances.

The contracts reported in this issue of Aviation Week should alleviate the financial problems of several manufacturers. The concentration of the contracts with relatively few manufacturers would indicate that the Air Force is primarily concerned with national defense considerations, rather than with any attempt—by spreading available funds around—to keep the bulk of the industry on at least a subsistence diet.

An important point to be considered in evaluating the new orders is that under law, funds to pay for the planes remain available only until June 30, 1949, unless reappropriated. This, again, points to rapid production as it is unlikely that the Air Force's plans envision reappropriations in a tight federal economy. Undoubtedly, the Air Force's desire would be to have fiscal 1950 funds only for new obligations.

The fact that USAF has, in effect, "shot its wad" gives sound reason to believe that the service chiefs have now decided that chances for appropriations large enough to guarantee a fairly high level of production are better than they were when the industrial preparedness plans were first put in the works.

CASE IN POINT—In a contradictory vein, the new contracts offer a case for industrial preparedness planning. The airplanes involved were all conceived several years ago, most of them during the war. They have only now reached the stage of production. That is the main argument of the industrial preparedness planners—that the lag between conception and production of an airline is so great that long-range planning is imperative.

It may be significant that USAF awarded contracts for the North American B-45 and P-86 before the planes had completed tests. Navy likewise gave WAA an order for the FJ-1 before it had finished its tests, and either has or shortly will award an order to Grumman for its F9F-2 while it is still in the experimental stage. It followed the same procedure with the McDonnell F2H-1.

This is a system that had not been practiced before in peacetime and, while demonstrating the urgency of the services' need for modern equipment, also cuts down the time lag between design and production. Because of this time-saving element, the procedure of buying from the drawing board is in itself an industrial preparedness measure.

SELLING ARGUMENT—While containing an element of risk (that the plane may later have to undergo extensive revision with consequent production delays), the risk is reduced by the experience and qualifications of the manufacturers. The risk is well-calculated from the standpoint that it has advantages over the basic industrial preparedness plans in making possible the showing of a tangible article rather than plans when the services try to sell their budget requests to the public and Congress.

It is highly likely that despite the effort they have put forth to date, both the Air Force and Navy will have a major selling job yet to do when they enter the congressional appropriation hearing rooms. The recent budgetary recommendations of the National Association of Manufacturers contain the disquieting proposal that national defense expenditures be reduced from the current year's level in keeping with a "peacetime" economy.

Of perhaps more concern to the industry is the NAM recommendation that the practice of granting large contract authorizations be discontinued. If followed, this suggestion would all but wreck what little long-range procurement planning the Air Force presently can do.

NEWS DIGEST

DOMESTIC

P. W. Litchfield, Goodyear Tire and Rubber Co. board chairman, was awarded 1947 public relations award for greatest contribution through public relations to the national welfare. Primarily responsible was Litchfield's "greatest story ever told" radio program.

Ninety-Fourth fighter squadron of P-80B Shooting Star jet fighters arrived at Ladd Field, Fairbanks, Alaska for six months cold weather training. Fighters were especially modified at Lockheed-Aircraft Corp. for the –65 degree cold of the Arctic regions.

President Truman created Interdepartmental Committee for Scientific Research and Development naming John R. Steelman coordinator. Committee includes Departments of Army, Navy, Air Force, Commerce, Agriculture, Interior, Federal Security Agency, Veterans Administration, NACA and Smithsonian Institute.

Secretary Symington revealed Air Force has abandoned "West Point of Air" proposal and hopes to obtain ⅓ of its air cadets from the military and naval academies. Remainder will come from National Guard, college programs and enlisted personnel.

FINANCIAL

Beech Aircraft Corp. reports net loss of $1,816,469 for the fiscal year ended Sept. 30 after inclusion of $4,895,295 tax carry-back credits. Total sales for the year were $26,211,411. Backlog was reported at $22,400,000.

Roosevelt Field, Inc. declared a dividend of 25 cents per share common payable January 26 to holders of record January 5. Previous payment was 25 cents in December, 1946.

Luscombe Airplane Corp. reports net loss of $54,110 for six months ended June 30 on sales of $1,860,522 compared with $69,212 loss on $2,309,329 sales same period previous year.

FOREIGN

Linea Aeropostal Venezolana (LAV) has signed a contract with Chicago and Southern Airlines to link services at Havana, Cuba. Under terms of the agreement, C&S will transfer passengers at Havana to LAV for flight to Venezuela.

Government of India has approved the establishment of "Air-India International, Ltd." to link India with Europe by air. Indian Government is providing 49 percent of the initial $3 million capitalization with option to buy 2 percent more to assume control at any time. The Bombay-London route will use Lockheed Constellations on a twice-a-week schedule beginning in May.

British European Airways completed 8,635 passenger flights over 1,332,400 plane miles during September, 1947. Over 17,035 route miles, BEA carried 69,459 passengers 15,133,000 passenger miles and delivered 236,300 lb. of mail and 428,600 lb. of freight.

LETTERS

Geisse & Predictions

To the Editor:

Last evening I read your editorial in which there was at least an implication that Mr. Burden and Mr. Wright had been too optimistic in their predictions for private flying.

Have you forgotten that all of our optimistic predictions were predicated upon the accomplishment of changes which we believed necessary before private flying could appeal to many people?

If you have a copy of Mr. Williams and my report to Burden, "Postwar Outlook for Private Flying," you will find on pages 193 and 194 my estimate of "postwar market for prewar private flying." It called for 39,000 new planes in the first year following the war and 16,000 in the second year.

Also, if you will look at "Our Plan for Private Flying" by Ted in the April 1945 issue of Flying you will note that he predicted a leveling off at 75,000 personal planes for prewar types.

I think you will agree that we have so far offered prewar flying with little change.

JOHN GEISSE

Mutual Firms Overlooked

To the Editor:

Your article of Oct. 6, entitled "Losses Make Insurance Companies Leave Personal Plane Market," overlooks entirely the mutual insurance companies which are actively participating in insuring aircraft.

It is true that there are three main stock insurance company groups competing for the aircraft insurance business. It is also true that a number of insurance companies entered the aviation insurance field at the close of the war and that many of them have decided to curtail or abandon their aviation insurance writing. However, the mutual companies entered the aviation insurance field in 1941 and have been building a constantly increasing volume of this business. They do not have any intention of withdrawing from the field.

Their presence is an important economic factor because the unused portion of their premium is returned to policyholders in the form of "dividends." These savings are extremely important to the aviation policyholder in this era of high rates, which result from the high loss level at this time.

The plan of operation of the mutual companies in the aviation insurance business is unique. It was decided upon in 1941 after a careful survey was made of the operating methods of the three groups and of the methods of other independent companies. The mutual companies operate independently insofar as sales and service is concerned. This is comparable to the operation of all companies in the automobile field, and the mutual companies believe it is the best method for long range operation. They consider the group method as unwieldy and expensive.

The unique feature of mutual fire company operation is their participation in an official rating bureau such as is used for other types of insurance. The Transportation Insurance Rating Bureau provides insurance rate service to its members and subscribers in the field of Inland Marine and Aviation insurance. There is no other comparable organization for the rating of aviation insurance. The method gives the mutual fire companies the technical advantage in the computation of rates, but it does not hamper them by an unwieldy group operation when sales and service are concerned. . . .

In general, we wish to commend you on the accuracy of the article insofar as loss and rate trends are concerned. . . .

W. H. RODDA, Secretary
Transportation Insurance Rating Bureau
Chicago, Ill.

Mandatory Stall Warnings

To the Editor:

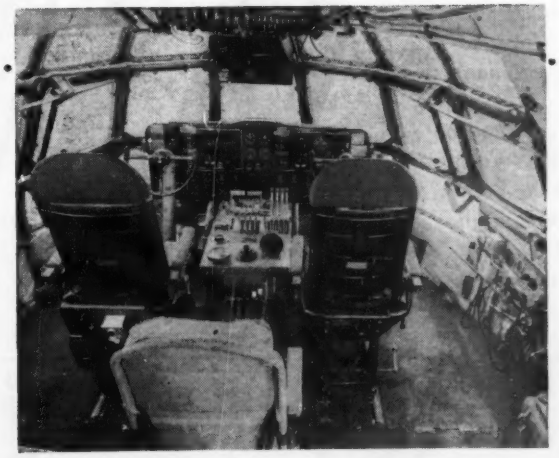
Your editorial Nov. 10 suggesting or possibly implying that there ought to be a regulation requiring all aircraft to have stall warning indicators is very interesting. I agree with you that the safe flight indicator is certainly a big aid in safe operation of aircraft, I am delighted that such an instrument is available on the market, and I hope that aircraft owners and manufacturers will begin to use them so that possibly we may have them on all aircraft in the near future. I don't agree that stall warning indicators should be mandatory on aircraft as recommended by the CAA non-scheduled flying advisory committee. I am afraid that it appears that this group is working so closely with the CAA that possibly they are not reflecting true industry opinion in all of their recommendations. It is true that many aircraft accidents are caused by stalls, and I believe that in the interest of safety the aircraft manufacturers will come around to equipping their aircraft with an indicator as the advantages of this instrument become better known. Isn't it an accepted fact that the automobile would be considerably safer if the occupants of all autos were made to wear safety belts? Possibly if this were done hundreds of thousands of lives annually could be saved. But is anyone actually making a fight to have all automobiles equipped with safety belts? I believe that many people would think a law requiring auto safety belts would be carrying "planned" protection a little too far.

I repeat again that the stall warning indicator seems like an excellent aid to safety, but let's not make it mandatory. Is the Washington fog settling on you too? God forbid!

BEVERLY HOWARD, President
Hawthorne Flying Service
Charleston, S. C.

On the Boeing Stratocruiser

Safety Glass BY "PITTSBURGH"



In the control cabins of all Boeing 377 Stratocruisers, where the best of everything is vital, specifications call for windshields of Pittsburgh Safety Plate Glass.

NEW developments by "Pittsburgh" have kept pace with the American aviation industry's demands for special glasses, plastics, glass-and-plastic combinations and advanced glazing techniques.

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Vol. 48, No. 1

AVIATION WEEK

Jan. 5, 1948

Aviation Industry Eyes Congress For Stable Policy and More Funds

Action on Air Policy Board report unlikely during election year rush to adjourn; procurement progress expected.

The aviation industry looks hopefully but skeptically to the second session of the 80th Congress convening tomorrow to blueprint a course promising vigorous growth and financial stability.

Interest is focused on the joint Congressional Air Policy Board, whose four subcommittees—on combat aviation, manufacturing, transportation, and government organization—are tackling major problems and issues in the aviation field. Only two issues—the highly controversial sea-air and chosen instrument—already thoroughly threshed out at Congressional hearings have been excluded from the Board's agenda. With the benefit of the findings of the President's Air Policy Commission, the group, whose chairman is Sen. Owen Brewster (R., Me.) and vice chairman, Rep. Carl Hinshaw (R., Calif.), will launch public hearings in the near future.

▶**March Deadline** — Although the Board's final report, due March 1, is expected to offer a blueprint for peacetime air power, commercial and military, its chances for implementation during this session seen dim. An early adjournment of Congress this election year, probably by July 1, can be counted on. This would leave the standing committee of Congress only four months in which to follow through on the Board's recommendations with legislation, hearings, and action. The standing committees—rather than the policy board, which has only power to recommend—will make the decisive moves affecting the aviation industry.

Appropriations committees of the House and Senate will be well along with groundwork on the 1949 fiscal year aviation budgets—for the Air Force, Naval Aviation, Civil Aeronautics Administration, Civil Aeronautics Board, and the National Advisory Committee for Aeronautics—long before the Board has announced its proposals on aviation expenditures. Appropriations committees' decisions on aviation budgets will primarily be the result of weighing them against other demands for cuts from the federal expenditures pie. Although the President's Air Policy Commission, and now the joint Congressional Board have mobilized support for increased military aviation expenditures, the political pressure for other expenditures of the pork-barrel type remains stronger. With the Republican Congress striving to lower the ceiling on Federal expenditures and cuts in pork-barrel outlays unlikely in a presidential election year, the outlook for greatly increased aviation budgets is not bright.

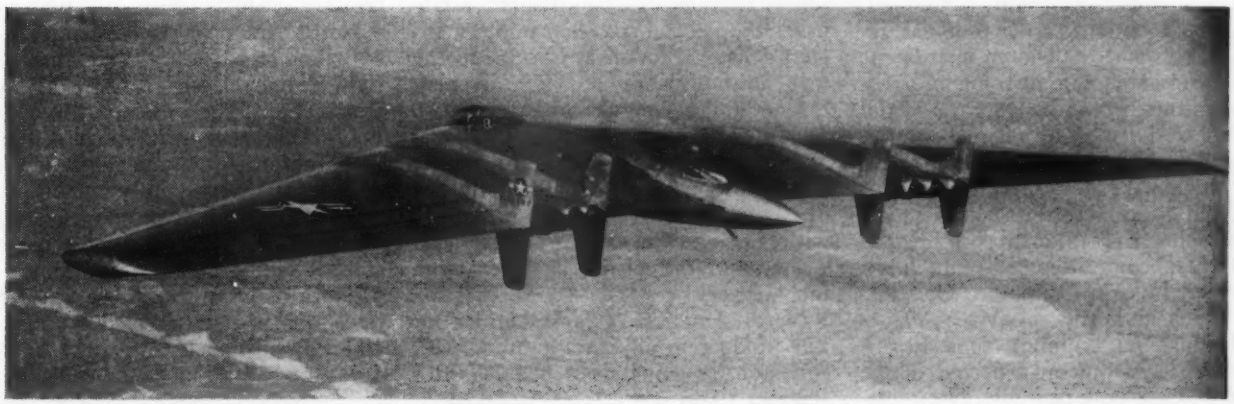
Armed services committees of the House and Senate will not wait on the policy board before pushing for completion of Congressional action on comprehensive procurement legislation.

▶**Procurement Progress**—Two major procurement measures have been passed by the House and approved by the Senate Armed Services Committee:

The Omnibus Armed Services Procurement bill, codifying and modernizing regulations and removing restrictions on negotiated (as opposed to competitive bid) contracting.

The bill revoking the Vinson-Trammell Act's provisions requiring that 10 percent of Naval aircraft be manufactured in government-owned plants and placing a 12 percent profit limitation on military and naval aircraft contracts. Both measures are scheduled for Senate action early in the session.

Armed services committees are also



JET FLYING WING IN FLIGHT

Most recent photo of Northrop YB-49, new jet version of the famed Flying Wing bomber, shows slim, clean lines in flight at 12,000 ft. over Mojave Desert near Muroc Air Base, Calif. Test flights on the YB-49 got under way immediately after its Oct. 21, 1947, first takeoff and have continued steadily ever since. Trouble-free jet engines offer ground crew contrast to failure-plagued gearbox system of XB-35 propeller-driven bombers. Second YB-49 has been completed and is scheduled to fly away from Northrop's Hawthorne, Calif., plant early in January of this year.

expected to pace a $220 million Army and Air Force and a $239 million Navy public works bill through Congress in the near future. The Senate Armed Service Committee has already approved both measures, authorizing a $135 million development at the Navy's Point Mugu Missile Test Center and a $27 million development at the Trenton Turbine Laboratory.

▶ **Surface Issue**—The surface carrier issue promises to continue to dominate the air transportation picture on Capitol Hill. A subcommittee of Senate Interstate and Foreign Commerce Committee, headed by Sen. Homer Capehart (R., Ind.), is scheduled to open hearings soon on legislation establishing a Department of Transportation to take over the functions of the Maritime Commission, Civil Aeronautics Authority, and the Interstate Commerce Commission—a proposition long advocated by the Transportation Association of America, a generally acknowledged railroad "front" organization, as a first step toward integrated transport operations. The bill was introduced by Capehart.

Steamship and railroad interests, as well as non-scheduled air freight operators, are expected to continue pressure on the House Post Office Committee for legislation clamping down on mail payments to air carriers. Rep. Edward Rees' (R., Kans.) subcommittee will conclude hearings on the subject within the next few weeks, and is expected to recommend legislation directing a bookkeeping separation of airmail "service" and "subsidy" payments. The proposal appears to have a better than 50-50 chanse for Congressional approval.

▶ **House Deadlock**—Deadlock in House Interstate and Foreign Commerce Committee over the "chosen instrument" bill and legislation authorizing surface carrier operation of airlines shows no sign of breaking. Action on both propositions was "indefinitely postponed" last year when steamship spokesmen, backing the surface carrier proposal, refused to support the chosen instrument measure and chosen instrument advocates, in turn, prevented approval of the surface carrier measure. Sen. Brewster, touchy on the subject since his summer tangle with Howard Hughes, is not expected to seek further consideration of his chosen instrument bill by the aviation subcommittee of Senate Interstate and Foreign Commerce Committee, which he heads.

Hearings on omnibus domestic air transport legislation are expected. Three such bills are now pending: The measure introduced by Sen. Pat McCarran (D., Nev.) and Rep. Cecil King (R., Calif.) setting up an independent civil aeronautics authority, and bills introduced by Sen. Brewster and Rep. Charles Wolverton (R., N. J.) making revisions in the 1938 CAA act.

Bitter Battle on Landis

Reappointment of CAB Chairman James M. Landis—whose term expired on Jan. 1—was hanging by a thread last week with his friends and enemies fighting bitterly to gain the ear of White House advisers.

A strong counter-attack against the anti-Landis campaign which has been gathering momentum for the past three months developed during the final week of 1947. Davis L. Behncke, president of the Air Line Pilots Association, issued a public statement backing Landis. William Green, president of the American Federation of Labor, was using his influence in favor of the CAB chairman's reappointment.

Landis was obtaining support from a variety of sources on Capitol Hill —some of which are at opposite political poles. Sen. Claude Pepper (D., Fla.) and Sen. Robert Taft (R., Ohio) both advised the White House of their support for a Landis reappointment.

Leading Landis' opposition were American Airlines, United Air Lines, Eastern Air Lines and Pan American Airways. Feeling among executives of the larger carriers is that Landis' safety ideas will cost the industry more than can ever be recouped through mail pay increases. Landis has been outspokenly critical of airline management's economic and financial planning in the postwar period.

Behncke, in his statement supporting the present chairman, declared: "Landis has done more in the brief period of his appointment—16 months—than all his predecessors combined have done in years to promote air safety. Failure to reappoint him because of pressure moves for his ouster by vested interests will wipe out every advance which has been made in air safety during his term of office."

ALPA also condemned the Air Transport Association's last minute withdrawal from participation in the final report of the President's special board of inquiry on air safety (of which Landis is chairman) as "an obvious part of a well-planned move to discredit the CAB executive."

Air Force Reveals New Orders For 1,150 Military Planes

North American gets bulk of recent post-war orders; Boeing B-50 contract increased.

U. S. Air Force last week announced year-end procurement decisions on the growing stable of experimental prototypes flown during 1947. Production orders totalling 1,150 airplanes establishes the pattern for 1948 military aircraft deliveries and gives impetus to the first major phase in the Air Force plan for an all-jet combat force by 1950. North American Aviation, Inc., emerges as one of the dominant postwar combat aircraft producers and shares the brunt of Air Force production responsibilities with Boeing, Convair and Lockheed.

Status of major new air force types includes:

• **North American P-86**—Contract for 225 production airplanes awarded with squadron assignments scheduled this summer. Top speed is over 600 mph. and ceiling more than 40,000 ft. Range is 1,000 miles. Only one of two prototype XP-86 has been delivered to Muroc Air Base, Calif., for flight tests.

• **Boeing B-50**—Contract has been increased with new order for 82 airplanes, bringing total commitment to 215 airplanes. Two production B-50's have been delivered for service tests. First tactical unit assignments will be made this spring. Top speed is 400 mph. and cruising speed is about 300 mph.

• **North American B-45**—Contract for 100 announced earlier. First deliveries from former Douglas plant at Long Beach, Calif., are expected this spring. Four-jet bomber will go into service with Tactical Air Command as low altitude attack plane, replacing propeller-driven twin-engine types now in service. Top speed is more than 480 mph. and combat radius is above 800 miles.

• **North American P-82**—Earlier contract for 250 now revealed as order for 100 P-82E models and an additional order for 150 of later models. Already in production, first P-82B fighters are in service with the 27th Fighter Group at Kearney Air Field, Nebraska. These planes will be used for familiarization duties until the new P-82E's become available. Top speed is better than 475 mph. and a combat range of 2,500 miles. New model is powered by 2,200 hp.

Allison V-171 reciprocating engines, replacing the Rolls-Royce engines used on the famed "Betty Jo" and other early models. Heavy fire power is concentrated in six .50 caliber machine guns mounted in the wing center section between the twin fuselages plus a special eight-gun pack mounted beneath the wing. A large variety of rockets, bombs, chemical tanks and other ordnance may be carried.

• **Republic P-84**—Earlier order for 500 increased to 600, assuring the Thunderjet a position as standard Air Force jet fighter. About 85 airplanes have been delivered with the 14th and 20th Fighter Groups slated for complete outfitting with the fast new craft.

• **Boeing C-97**—Current commitments are for 10 airplanes with an additional order for 27 now being negotiated. Six Stratocruisers have been delivered, most of which are now in trans-Pacific operation by Air Transport Command.

• **Lockheed P-80**—Current production contracts will maintain P-80B production throughout the year with about 200 P-80B and 350 P-80A now in service. Lockheed is currently modifying existing P-80A models into P-80B models by structural and installation changes.

Currently being passed over by the procurement selection board are the Convair XB-46, Martin XB-48, Northrop XB-35 and YB-49, Curtiss XP-87 and the Convair C-99. Still definitely in the procurement picture is the Boeing XB-47, radical new sweptwing bomber test flown last month.

Miscellaneous types being procured by the Air Force include:

• **Boeing L-15**—Slow-flying liaison plane able to clear a 50 ft. obstacle in 600 ft. A total of 10 is being built for the AGF.

• **Sikorsky R-5F**—Improved helicopter features 1,200 ft. per min. Rate-of-climb and a 245 mile range. Original contract for 11 will be increased shortly.

• **Fairchild C-11**—Contract for 37 previously announced but additional orders contemplated. Improved Packet features nose-mounted flight deck, 3500 hp. P&W Wasp Major engines.

• **Republic F-12**—Contract for 20 not yet announced but being negotiated. Giant photo-reconnaissance type is needed for "high priority" mission in Alaskan theater.

New Fire Device

Australian civil aviation department witnessed successful tests of a new fire detection and control system which enables the pilot to push a single button to shut off all inflammable liquids and release extinguishing fluid. The tests, carried out at Mascot Airdrome, Sydney, proved the experimental installation satisfactory and the system is expected to be made mandatory on all Australian airliners.

Wright Reports Rise In Civil Aviation

Expansion of U. S. civil aviation in number of pilots and airports, and airline passengers, was announced by T. P. Wright, administrator of civil aeronautics, in a 1947 year-end report, which showed a drop in civil aircraft production as the only statistical cloud in an otherwise bright picture.

He reported:

• An increase of nearly 100 percent in private pilot certificates, over 1946 figures, with 125,000 issued, and a record number of student pilot permits, 200,000 in 1947.

• Airports increased in the year from a total of 4,490 to 5,850, but only six of the airports completed were under the Federal Airport Aid Program, and only 127 airport projects had been given federal aid approval, at year's end.

• Airlines in domestic and international operations carried 15,700,000 passengers an increase of 18.5 percent over last year with the total fleet of airline planes increased to 965 planes from 826.

• Civil aircraft production dropped to 15,800, less than half the total production in 1946, (35,001) but value of production increased from $171,064,000 to $188,480,000 as result of delivery of larger and more expensive aircraft.

The Administrator reported that the number of certificated pilots continued to increase, from 400,000 to 455,000 and the registered civil aircraft total moved up from 81,002 to an estimated 95,000.

Airline safety record was not as good in 1947 as in years past from the standpoint of fatalities per 100,000,000 passenger miles, although there were fewer aircraft involved in fatal accidents (5). The larger planes however involved more passengers per plane.

Brewster Urges Plan For German Airways

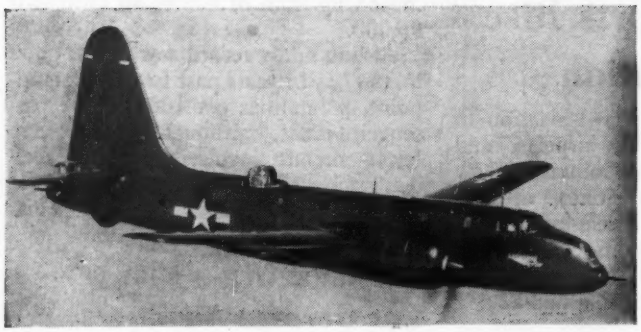
Development of an air transport system in Germany by U. S. interests is urged by Sen. Owen Brewster (R., Me.) in a report to Sen. Wallace White (R., Me.), chairman of the Interstate and Foreign Commerce Committee.

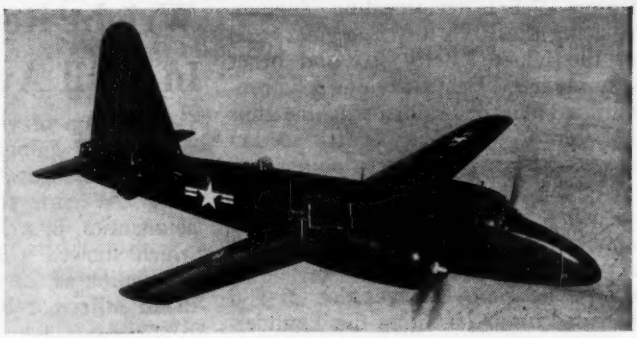
"All concerned in Germany, from Gen. Lucius Clay down, are extremely desirous that the U. S. should not miss this opportunity for the development of air services in Germany particularly in the areas under our control and in contiguous areas both in Germany and outside. Since we are at the present time responsible for the airports and landing facilities, it would be a curious anachronism if we should carry these on largely for the service of foreign lines but this is likely to be the result unless there is early coordination of all American air activities in this area."

U. S. development of German feeder lines, Brewster suggested, would mean the funnelling of local traffic into U. S. international carriers—American Overseas and Pan American Airways, both of which are now flying into Frankfurt. Foreign lines now flying into Germany, he reported, are utilizing U. S. airports and facilities.

GRUMMAN TORPEDO-BOMBER TESTED

Exclusive photo of Grumman XTB3F reveals side-by-side seating of pilot and radar operator for close coordination. Craft is composite powered by P&W R-2800 radial in front and jet in rear for temporary boost. Both Westinghouse 19XB and 24C were tested but the jet installation has been removed and accommodations for two crew members added in rear belly. Eleven-ton craft has 400 mph. top speed and 36,000 ft. ceiling. One internal and two external torpedoes can be carried as well as Tiny Tim and five-inch rockets. Two 20 mm cannon are fixed armament. Navy abandoned design for procurement but is continuing prototype tests at N.A.M.C. Philadelphia. (Navy photo)





TURTLE IS IMPROVED: Before and after versions of the Navy's Lockheed P2V long range patrol bomber are shown above. The P2V-1 (left) set a world long distance record of 11,236 miles nonstop from Perth, Australia, to Columbus, Ohio. Latest Navy order is for the P2V-2 featuring nine major changes. External changes visible include longer, radar-packed nose and smaller dorsal gun.

Navy Increases Neptune Order

New version of Lockheed patrol bomber has heavier armament, new props and engines.

Boosting its production order of Lockheed Neptunes, the Navy announced a faster and more heavily armed version of its famous patrol bomber. The new order for 29 P2V-2's increases the Navy's total order to 150 of the planes, the original of which currently holds the world's distance record with a 11,236 mile nonstop flight from Perth, Australia, to Columbus, Ohio.

New features of the P2V-2 include:

• **Better engines**—New series of Wright duplex cyclone engines increase takeoff power by 600 hp. giving a faster rate of climb.

• **New propellors**—Hamilton Standard three bladed paddle props replacing the four-bladed narrow chord props. Electric de-icing replaced alcohol system on the blades.

• **De-icing**—Combustion type heaters provide thermal de-icing for wing and enpennage.

• **Radar**—New search radar and a variety of tactical radar equipment are housed in the elongated nose.

• **Armament**—Six fixed 20 mm. cannon in the nose fired by the pilot replaced the two .50 cal. flexible machine guns on the P2V-1. Two 20 mm. cannon replace twin .50's in the dorsal turret. Turret has also been streamlined. Tail armament has been changed to two 20 mm. cannon. P2V-2 also carries 16 five inch rockets, two torpedoes or a dozen depth charges.

▶ **Radar**—Elongated solid nose replaces the bombardier nose and houses search radar and a variety of tactical radar as well as revised armament. New nose adds 2½ ft. to length of plane.

Production on the latest Neptune contract is expected to continue until June 30, 1949. Navy now has three Neptune squadrons in active service.

Earlier model of the P2V was recently wrung out in a strenuous 10-day test program at Patuxent by Lockheed test pilot Stanley Beltz. In addition to slow-rolling the Neptune on a single engine, Beltz flew the bomber at 385 mph., and pulled out of a dive at 2.9 G exceeding the Navy requirements of 344 mph. and 2.67 G. Beltz also flew it at 65 mph. with good control.

Loaded to its designed operating weight of 45,000 lb. dive tests were run with a 45 degree dive required to exceed maximum allowable speed with bomb bay doors open. Pull out of 2.8 G was made at maximum operating of 58,000 lb.

Extreme stalls with nearly full power on, violent yaws and landing at 50,000 lb. gross and landings with both engines dead completed the tests.

Aluminum Shortage Looms for Industry

The domestic aluminum industry this year, hamstrung by a shortage of electric power, will fall short of supplying the nation's needs by a minimum of 20 percent.

The shortage, some 320 million pounds, is figured only from present demand. Any increase in use of the metal, such as a revitalized military airframe production schedule, would add just that much more to the debit side of the order books.

▶ **Power Shortage**—Scarcity of electric power, not plant capacity or raw materials, is the reason for the predicted shortage. All three of the major producers of the light metal in this country—Alcoa, Reynolds and Kaiser—next year will either be cut off from some of their present power sources or will be unable to regain those dropped last summer when several of the larger plants shut down in face of an aluminum surplus.

Reynolds is in the worst fix. Its Longview (Wash.) plant, which closed down last spring and gave up a power contract with Bonneville Power Dam, has not been able to regain this source of power. This means 60 million pounds of pig aluminum will not be produced.

The company's Lister Hill (Ala.) plant has two of its "pot lines" down and can't obtain the power commitments from TVA to put them back into operation. That means another 40 million pounds less aluminum.

▶ **Seek Plants**—In an effort to up its base metal output, Reynolds has been negotiating with War Assets Administration to put into production two idle pot lines at the Jones Mill (Ark.) plant, where the company already has two lines in operation. Here again power comes into the picture. Arkansas Power and Light Co., which supplies the area, has all the customers it can handle now. In order to help Reynolds, the utility will have to take kilowatts away from someone else. There is another 70 million pounds of metal not being produced.

Kaiser's Spokane (Wash.) plant could produce another 35 million pounds of metal next year if it could get the power from Bonneville. So far no extra current has shown up.

Alcoa, best off of the three, principally because it has three power dams of its own in the TVA chain and has a contract that provides enough power to cover maximum needs in its plants in the region, still has trouble on the way.

One of the company's pot lines at its Vancouver (Wash.) plant is running on power contracted for only up to April. After that time, the company fears, Bonneville will not renew the contract. There goes another 30 million pounds of light metal.

▶ **Ingot Supply**—Just to make it worse, the supply of ingot (150 million pounds) coming from remelting plants at the huge western war plane scrapping yards will dry up in May. Scrap, which the industry has been charging at the rate of 150 million pounds this year, is expected to be harder to find next year.

XB-47 Dives at 720 Mph.

Revelation of a 720 mph. indicated diving speed for the new swept wing Air Force Boeing XB-47 bomber proves the new craft not only the fastest bomber but one of the fastest airplanes ever built, with a top indicated speed in level flight approaching 655 mph., just over the accepted speed record for airplanes. The initial 51-min. test flight by Boeing test pilots Robert Robbins and Scott Osler took the huge, 125,000-lb. bomber aloft to 16,500 ft. en route to Moses Lake Air Force field in central Washington.

A second test flight took the giant craft up to 18,000 ft. on a 62-min. hop during which stall and control characteristics were tested satisfactorily. A speed of 400 mph. was reported from this second flight. Both pilots pronounce the stability and control qualities of the airplane beyond their expectations. Cabin temperature control through heating and refrigerating equipment (for high-speed flight) performed perfectly.

Air Force has approved the use of the Moses Lake field, which is currently on a stand-by status, for a period of 30 days for phase I flight tests by Boeing personnel. Boeing is hopeful that the required 37 hours of phase I tests can be completed in the time allotted but weather may force an extension of the 30-day period. If the Air Force does not grant the extension, the XB-47 will be flown to the Air Force's Muroc Air Base, Calif.

U. S. War Plane Production Rises

Aircraft Industries Association estimates 1800 military aircraft made during 1947.

Military aircraft production during 1947 increased by thirteen and one-half percent over 1946, according to an industry summary prepared by the Aircraft Industries Association. Total of about 1,800 military planes was delivered during the year. Increase was represented largely by liaison-type aircraft. Airframe weight remained substantially the same as 1946 during which 1,330 military aircraft were delivered.

Non-military production for the year included some 280 transport and about 15,000 personal aircraft. Transport production, including twin-engine executive types, dropped sharply from the 467 delivered the previous year, reflecting the cancellation of airline transport orders recorded during the year.

Personal aircraft production was approximately one-half the previous year, although airframe weight was slightly more than one-half due to the increasing proportion of four-place types now in production.

► **Financial Reports**—Interim financial reports issued by major aircraft and engine companies indicate that the operating loss of the industry will approach $100,000,000 as compared to the $81,591,000 loss during 1946. This operating loss will be reduced to a net loss of about $25,000,000 by the application of tax carrybacks and the transfer of postwar reserves and other contingency funds.

Latest production figures from the Department of Commerce report deliveries of $77,283,490 worth of aircraft, parts and products during October, 1947. Of this total, $74,100,000 was in complete aircraft and parts. Sixty-seven percent of this total, $49,500,000 was in fulfillment of military contracts. These shipments represent an increase of 21 percent over September.

Air Force and Naval Aviation received 239 aircraft during October, a decrease of 26 percent from September. Military backlog for ensuing six-month period increased from $249,600,000 to $294,900,000. Non-military backlog declined from $201,290,599 to $183,094,257 all due to deliveries and cancellations of aircraft of more than 3,000 lb. airframe weight.

► **Engine Report**—Aircraft engine shipments were up 11 percent for October, totalling $29,600,000 as against $26,600,000 for September. Of this total $23,000,000 went to U. S. military customers, comprising 78 percent of the total. A total of 471 military engines and 696 commercial engines was delivered during the month. Engine backlog was up from 25,652 to 26,274 for non-military customers. Of these total unfilled orders, horizontally opposed personal aircraft engines comprised about 98 percent.

Employment was up slightly in October over the preceding month but still below the January peak. Aircraft plant employees totalled 145,338 and 32,954 employees were reported in aircraft engine plants, a total industry employment of 178,292.

Alaska Airlines Denies Violating Regulations

Alaska Airlines, answering a CAB show cause order (AVIATION WEEK, Dec. 8) has denied it violated provisions of the Civil Aeronautics Act in its operations between Alaska and the Pacific Northwest.

The company said its passenger-carrying service between the territory and continental U. S. have consisted in part of contract, non-common carrier flights and in part of nonscheduled and irregular common carrier flights under Section 292.2 of the Economic Regulations. Despite this stand, the carrier agreed to cease and desist from engaging in common carrier air transportation of persons between Alaskan points and continental U. S. except for charter and other special services conducted in conformity with its certificate for intra-Alaska operations.

LATEST GRUMMAN BEARCAT JOINS FLEET

Exclusive flight shot of Grumman F8F-1B, cannon-wing Bearcat, shows four fast-firing 20 mm aircraft cannon mounted in pairs in wings. New model also features revised radio and radar equipment and redesigned power plant section. In the 500 mph. class, the new F8F-1B is easily the fastest, hardest hitting propeller-driven shipboard fighter in the world. Navy dependence on Bearcat is evident from recent additional order for 95 following post-VJ order for 396. (Navy photo)

Aircraft Industry Safety Records Vary in Summer

The industrial injury frequency rate during July, August and September decreased in aircraft production but increased in aircraft parts production, according to a survey of the Bureau of Labor Statistics. On the basis of the first three quarters, it looks like the 1947 rate will show an improvement over 1946 in both industries.

Through September, the average number of disabling work injuries per million employee-hours worked was 4.6 for aircraft and 9.1 for aircraft parts. Respective figures for all of 1946 were 5.3 and 13.7.

During July, August and September, the injury rate for each month in aircraft was 5.6, 4.7 and 4.6, for third-quarter average of 5. In aircraft parts, the frequency during the same months was 6.7, 10 and 10.6, for an average of 9.1.

In both industries, the injury frequency rates are far below the average for all manufacturing industries, which was 18.1 for 1946 and above 15 in each of the first three quarters of 1947.

IATA's Clearing House Records October Drop

Although international air traffic clearings for October by the International Air Transport Association clearing house stood at $6,500,000, a figure $1,400,000 under September's record total, total clearings by the institution during the quarter ending in October were $21,800,000, against $12,300,000 for the three months preceding.

IATA reports through the London branch of the clearing house that the decrease in the October total, representing interline traffic transactions between the 24 clearing house members, was due to changes in accounting procedures, seasonal traffic variations, and travel restrictions in the United Kingdom.

AVIATION CALENDAR

Jan. 7-8. National Aircraft Standards Committee, Eastern Division, Washington, D. C.

Jan. 12-16. Society of Automotive Engineers annual meeting, Book-Cadillac, Detroit.

Jan. 26-30. 16th annual meeting, Institute of the Aeronautical Sciences, Hotel Astor, New York.

Jan. 26-30. American Institute of Electrical Engineers, Pittsburgh.

Jan. 27. American Road Builders Association, airport division, Washington, D. C.

Feb. 16-17. 2nd annual Purdue Airport and Fixed Base Conference, campus Purdue Univ., West Lafayette, Ind.

Mar. 30. ICAO personnel licensing division, Montreal.

April 1-3. American Institute of Electrical Engineers, Des Moines.

INDUSTRY OBSERVER

► **Air Transport Association's representative (Vice President Milton Arnold) on the President's special Air Safety Board will file a minority report on the Board's activities. Arnold pulled a last minute surprise walkout at the Board's final meeting after agreement had been reached on virtually all points except airline personnel policies. Majority report has been approved by Chairman James M. Landis; J. E. Wood, Eastern Airlines pilot representing ALPA; CAA Administrator T. P. Wright and J. W. Crowley, asst. research director of NACA substituting for NACA Chairman, Dr. Jerome C. Hunsaker.**

► Civil Aeronautics Board has approved Pan American Airways request to withhold from the public certain documents filed last month in Panam's Latin American mail rate case. Panam claims the documents contain secret information affecting national defense. Observers wonder if these would shed any light on the PAA documents that were once such a hot potato in the Senate War Investigating Committee.

► **New accelerating device, the largest of its kind in the world, now being designed and built by the McKiernan-Terry Corporation for the Office of Naval Research, will subject pilots and instruments to high accelerations, similar to those experienced in modern military aircraft in sharp turns or pulling out of dives. Accelerator will consist of a car or gondola, mounted at one end of a 50-foot horizontal arm, which will be directly attached to the shaft of a 4,000-horsepower electric motor. Automatic electronic control system will cause the motor to follow closely any predetermined speed programs. Both the electric drive and the electronic control systems are being designed and built by the General Electric Company.**

This device will be capable of speeding up and slowing down at a rate of 10 times the force of gravity. Peak acceleration of 40 times that of gravity will be obtainable.

► Northwest Airlines operational shakedown of the Martin 202 has indicated about 100 minor modifications needed to suit the airline's needs. Only major modification will hinge on the automatic propeller feathering device now required to meet the CAA's transport category regulations with a sizeable payload. Northwest has not yet determined what it will do about this problem.

► **Major airline assets of the 202, according to Northwest are improved passenger comfort (including more footroom, better visibility and lower noise level) faster on the ground handling and better block to block speed.**

► British European Airways will order 20 to 30 Airspeed Ambassador transports as replacements for the Vickers Viking on its continental routes. Ambassadors are expected to go into service in 1951. BEA turned thumbs down on the Vickers Viscount.

► **Northrop YB-49 has completed phase I (company) test flights and has been turned over to Air Force personnel at Muroc Air Base, Calif., for phase II tests. Chief AAF pilot will be Major R. Cardenas, Wright Field flight test section, who has already flown the eight-jet craft as co-pilot. A score or more Air Force flying wing pilots are available for the tests, having been trained for the purpose on the N-9M flying wing trainers stationed at Muroc over the past two years.**

► Solar Aircraft Co. and General Electric are conducting Navy instruction classes in atomic hydrogen and heliarc welding for aircraft.

► **Northrop XB-35 flying wing bombers, grounded at Muroc Air Base, Calif., for several months, are due to take the air again this week with new single rotation Hamilton standard four-bladed paddle propellers. Success of these test flights will be followed by production installation of these propellers on the remaining 11 airplanes of the B-35 contracts.**

► Completion of tests on a full scale Custer "channel wing" with 75 hp. engine at the Crook Aerodynamical Laboratory, Carderock, Md., indicate astonishing performance for the device in the opinion of Prof. Louis H. Crook, aerodynamicist at Catholic University. While previous wind tunnel tests at Wright Field on a one-third scale model had provided every indication of high lift at near-zero forward speeds, extrapolation to full scale proved impractical due to a complete lack of knowledge of scale effects. These recent full scale tests show direct lift at zero forward speed a near-certainty. First flight tests of a new Custer "channel wing" airplane now scheduled early in April are planned to demonstrate the direct lift characteristics without forward velocity.

American Cuts Order For Convair-Liners

Original contract for 100 reduced by 25, bringing Convair backlog down.

Consolidated Vultee Aircraft Corp. last week announced a 25-plane cancellation American Airlines' original order for 100 Convair-Liners.

The factory statement said, "unavoidable production delays, postponing early scheduled deliveries to American Airlines, have resulted in American and Convair agreeing to renegotiate their original contract, according to William A. Blees, Convair vice-president.

"American Airlines consented to release 25 of 100 planes ordered to make them available to other customers at a time when a stabilized production line will assure a profitable operation."

The American cancellation reduces from 178 to 153 the number of Convair-Liners listed for production under "firm" orders from customers who have made at least 25 percent down payments.

When American placed its original contract it agreed to payment of $173,350 per airplane, less engines and other items. Later, Western Air Lines ordered 20, subsequently cut to 10, at a price of $256,000 including engines and other accessories. A later price boost brought the selling price of the Convair-Liner to $360,000 (domestic) and $378,000 (foreign) less autopilot and radio. The current domestic price, fully equipped with autopilot and radio, is $385,000.

► **Order or Option**—Although Convair has consistently listed 100 planes for American in its Liner backlog, opinion for some time has been that the airline's order actually was firm for but 50 planes, with the remaining 50 on option. Presumably, American still has a firm order for 50, but with the option cut down to 25 planes.

Convair's announcement of the American order cutback contains ambiguous phrasing puzzling to industry observers of the hot competitive race in the twin-engine transport field, particularly the clause "when a stabilized production line will assure a profitable operation."

Convair officials on several occasions have indicated that the company will have to sell at least 300 Liners to realize a profit on the investment in the plane. With the reduction of the American order, the manufacturer now is about at the half-way mark in sales. The present Convair statement seems to be in conflict, also, with the comment of Floyd B. Odlum, when he took over as board chairman in November, that "further substantial losses during 1948 seem almost a certainty."

The heavy write-off of Liner inventories ($14,000,000) at the close of the 1947 fiscal year may have made it possible for Convair now to decide it can make a "profit" on the delivery of some of the 153 planes on order.

BRIEFING PRODUCTION NEWS

► **AiResearch Manufacturing Co.** has received a new order from Consolidated Vultee to equip Convair-Liners with pressure control instruments. Company already is furnishing cabin supercharger, turbine refrigeration unit for cabin cooling, cabin humidifier and other equipment for the Liner. AiResearch equipment now is in service on 12 domestic and 20 foreign airlines.

► **Beech Aircraft Corp.** expects increased orders next spring for its twin-engine model 18 transport, President Walter H. Beech has reported to stockholders. Company anticipates a profit in 1948. Production of the Bonanza has been cut back, due to seasonal sales drop. Until completion of tests, no orders are being solicited for the Twin-Quad four-engine transport.

► **Texas Engineering and Manufacturing Co.** has further diversified its activities by going into production on a sizeable quantity of subassemblies for truck bodies for transportation of soft drinks under contract with Hobbs Manufacturing Co., Fort Worth. As far as its aviation enterprises are concerned, TEMCO has announced it will confine its lightplane manufacturing to the two-place Swift 125, and not attempt to enter the four-place field.

► **Fleet Manufacturing & Aircraft Co.**, Fort Erie, Ont., has started work on a $5,000,000 contract to produce aluminum buses for Twin Coach Co., Kent, Ohio.

► **Firestone Aircraft Co.** has licensed Hydra-Control Co., Pasadena, Calif., to manufacture, distribute and service Firestone aircraft wheels and brakes. Hydra-Control will take over unfilled orders of Firestone and continue supplying and servicing Firestone customers.

► **Edo Corp.**'s commercial float division reports a loss for the first nine months of 1947 of $67,959, although sales of floats during the period totaled 632 sets, as against 151 sets in the best prewar year. Deficit is attributed to abnormally high development, tooling and engineering costs.

► **MacDonald Bros. Aircraft Ltd.**, Winnipeg, Canada, as the Canadian licensee of Edo Corp., is manufacturing Edo-designed floats installed on the DeHavilland Dove.

► **Victoria Modification Center,** Victoria, Texas, is negotiating contracts for modification of 10 C-46s, two C-45s, and one C-47, C-54 and PBY-5.

► **Glenn L. Martin Co.** is now designating its plastics and chemicals division as merely chemicals division to avoid any misimpression arising from use of the word plastics. The company's Painesville, Ohio, plant produces a polyvinyl resin raw material to be fabricated by other manufacturers.

► **Johns-Manville Corp.** has purchased Van Cleef Bros., Inc., Chicago manufacturer of industrial and automotive products, and it will be operated by present personnel as a wholly-owned J-M subsidiary.

► **Kennametal Inc.**, Latrobe, Pa., has opened eastern district offices at 6 West Broadway, New York City. Office will maintain engineering service, and stock standard tools and blanks for prompt delivery to plants in the area.

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Research Review:

Investigation of Ideal Flight Criteria Aids in Assessment of Test Results

Vital question of whether airplane performance is satisfactory now measured against certain requirements rather than being left to pilot's "feel."

By ROBERT McLARREN

The answer to whether an airplane handles "okay" in the air or whether its flying qualities are "unsatisfactory," long a matter of an individual pilot's reaction, can now be based on a definite set of requirements formulated as a result of extensive testing by the National Advisory Committee for Aeronautics.

The answer to that apparently simple question has been one of the most vital yet complex missions in aviation for on it hinges thousands of lives and millions of dollars invested in the creation of a new airplane.

Formerly the aircraft industry relied on the skilled test pilot whose experience qualified him to "judge" a new airplane in relation to those he had flown previously. While such comments as "she handles fine" and "feels heavy on the controls" by a test pilot had to suffice as approval or disapproval of a new design in the 'twenties, as the science of aeronautics expanded such cryptic log book entries grew progressively less useful to the engineer.

▶ **Details Needed**—Increasing pressure was brought to bear on test pilots during the 'thirties for more detailed interpretation of a test flight in terms of quantitative information. As a result test piloting became a highly selective profession with greatest stress laid on the engineering knowledge and analytical ability, and less emphasis on sheer flying ability. By the late 'thirties test pilots were required to be engineering graduates and such skilled engineers as Edmund T. Allen (Boeing), Robert Hall (Grumman), Marshall Headle (Lockheed) and H. Lloyd Child (Curtiss) established themselves as valuable technical assets to their companies as engineering test pilots.

However, it had become increasingly obvious that some system of criteria was badly needed to provide the designer with tangible objectives for his selection of qualities in a new airplane design. As investigations in this field got under way by individual companies (Edmund T. Allen was chosen to deliver the Sixth Wright Brothers Lecture on his work in this field), the armed services and the Government, it was soon clearly evident that here was no simple job of arbitrarily requiring a "gentle stall," a "quick spin recovery," or "spiral stability," particularly when it had not been shown that spiral stability, for example, was actually an essential characteristic of a safe airplane.

To answer these questions, NACA began an extensive research program in 1939 to determine the qualities of an airplane actually required for satisfactory and safe handling in the air. This program continued through the war with all types of combat aircraft and is presently being devoted largely to multi-engine commercial transport aircraft, among others. This research, involving thousands of hours of flight and wind tunnel tests of 165 different airplane designs, has established realistic requirements for satisfactory flying qualities.

LONGITUDINAL STABILITY AND CONTROL

• **Stick-Free Damping**—With the plane flying steady and level, the stick is moved suddenly and released. The resultant pitching of the airplane and movement of the elevator must completely disappear after one cycle.[3] This requirement insures that the airplane will be stable in rough air and that gusts will not aggravate the pitching moment incurring loss of control. This oscillation is of a short period involving a variation of the angle of attack at a substantially constant airspeed. Long period (phugoid) oscillations have been substantially eliminated as a requirement for safe handling insofar as no connection was revealed between such oscillations and a pilot's ability to control the airplane.[3] Short period damping depends on the elevator hinge moment coefficients, the mass balance and the moment of inertia of the control system.

• **Elevator Control System**—With the elevator held in a given position, the airplane should maintain the attitude assumed: with engines idling, flaps up or down, at all speeds above the stall; with engines delivering cruising power and flaps and gear down (as in the landing approach) at all speeds above the stall; and with engines delivering full power, flaps up and speeds above 120 percent of the stall. The forces on the elevator control should be such that "pull" forces are required at all speeds below the trim speed and "push" forces at all speeds above the trim speed. The elevator control force should always be enough to return it to its trim position. The elevator must be capable of maintaining the airplane in level flight at the maximum and minimum speeds required of the airplane.

To obtain these qualities, the elevator should be designed to obtain the allowable load factor of the airplane as well as the maximum lift coefficient by use of the elevator alone. For fighter aircraft, the elevator should be designed so that at least four inches of rearward movement of the stick changes the lift coefficient from 0.2 to the maximum lift coefficient of the wing. Control forces on the elevator in steady turning flight should not vary more than 50 lb. for every G pulled on transports and heavy bombers but less than 6 lb. per G on fighter types and in all types it should require at least 30 lb. of stick force to attain the allowable load factor.[3] This latter requirement prevents accidental overloading of structure.

• **Elevator in Landing and Takeoff**—The elevator control should be powerful enough to hold the airplane off the ground until the minimum speed of the airplane is reached. This force should not exceed 50 lb. on control wheels and 35 lb. on control sticks.[4] The elevator should be capable of holding the airplane level after one-half the takeoff speed has been reached.

• **Longitudinal Trim**—After the airplane has been trimmed in level flight (with zero stick forces), the elevator must be capable of trimming the airplane without forces greater than 50 lb. (35 lb. for stick) regardless of the changes in power or flap settings. Trim tabs must be capable of reducing the stick force to zero: under cruising conditions at any speed between high speed and 120 percent of the stalling speed; in the landing condition at any speed between 120 and 140 percent of the landing speed; and they must maintain a given setting for an indefinite period of time.

LATERAL STABILITY AND CONTROL

• **Stick Free Damping**—When all controls are released in flight, lateral oscillations of the airplane should always damp to one-half amplitude within two complete cycles. When the ailerons or rudder are moved and released sud-

(*Continued on page 22*)

Shown above is the new four-wheel main landing gear being installed on B-36 production models at the Consolidated Vultee Aircraft Corporation's plant at Fort Worth, Texas.

Completely equipped with Timken Tapered Roller Bearings, the eight 56-inch wheels distribute the bomber's 278,000 pounds over a greater area than the two 110-inch wheels on the experimental model, enabling the new ships to utilize a greater number of airfields for their fabulous flights of 10,000 miles with 10,000 pounds of bombs.

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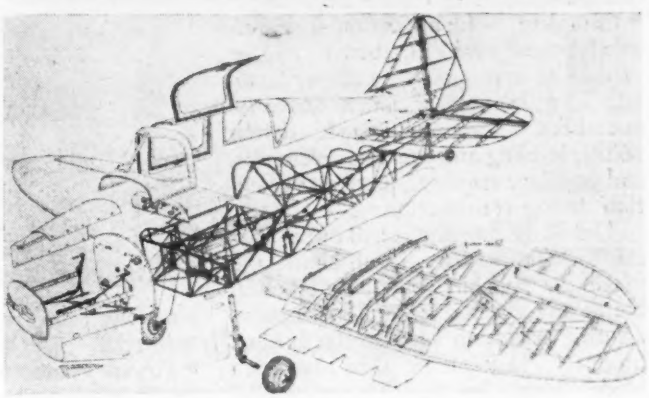
Complex Problems Solved in Dart Kit

Production aircraft broken down into 22 items designed for ease of packaging, shipping and amateur assembly.



Dart Aircraft Corp's. plans for making their 1948 planes available to the general public in kit form (AVIATION WEEK, Nov. 17) has entailed solution of complicated engineering problems. The preparation of prefabricated parts for these kits had to be tackled from the standpoint the company was taking a current production plane and dividing it into components which would lend themselves easily to amateur construction. The necessity for manufacturing all major sections, and those consisting of precision shapes, to factory specifications, called for a comprehensive analysis of the entire structure in order to prescribe a definite division between prefabricated parts and "knocked-down" assemblies furnishing a variety of construction problems to purchaser and at the same time insuring adequate structural safety and retention of familiar lines in the finished aircraft.

Also entering into the picture was the problem of kit dimensions and means of packaging and shipping. Since various transportation facilities would be used, it was evident that a standardized packing method would not be satisfactory because of the unnecessary expense entailed. The company decided to offer alternate packaging thus saving costs on shipments not requiring crates.

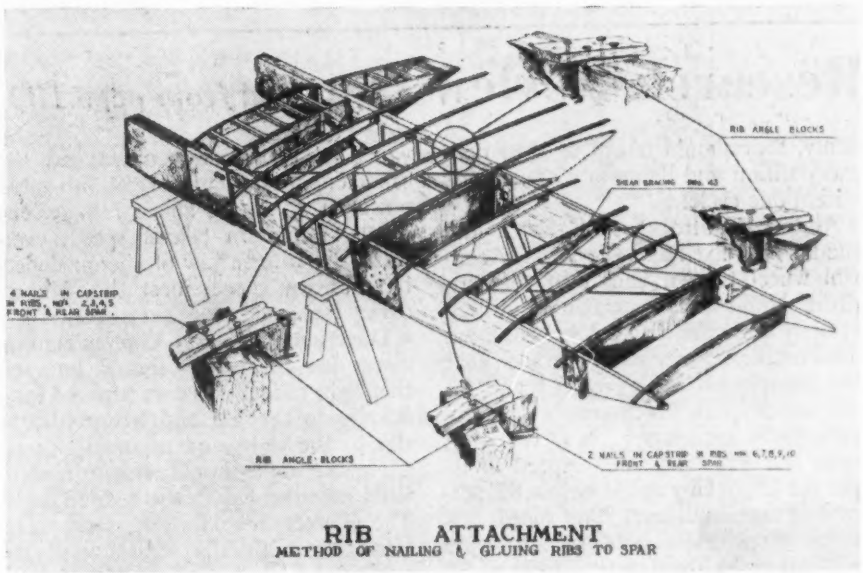
▸ **Items Included**—Kits, as made up at the factory, contain 22 items including prefabricated sections and parts, nails, fittings, and glue. Contents of the basic kit list:

• **Welded Structures**—Control stick assembly, elevator control assembly, rudder pedals, bunge control assembly, brake control assembly, engine mount, nose cowl, channels and fittings for cowling, fire wall, seat assembly, fuel tanks (2), hatch frame, landing gear assembly, tail wheel spring, tail assembly (stabilizer, elevator, fin, and rudder).

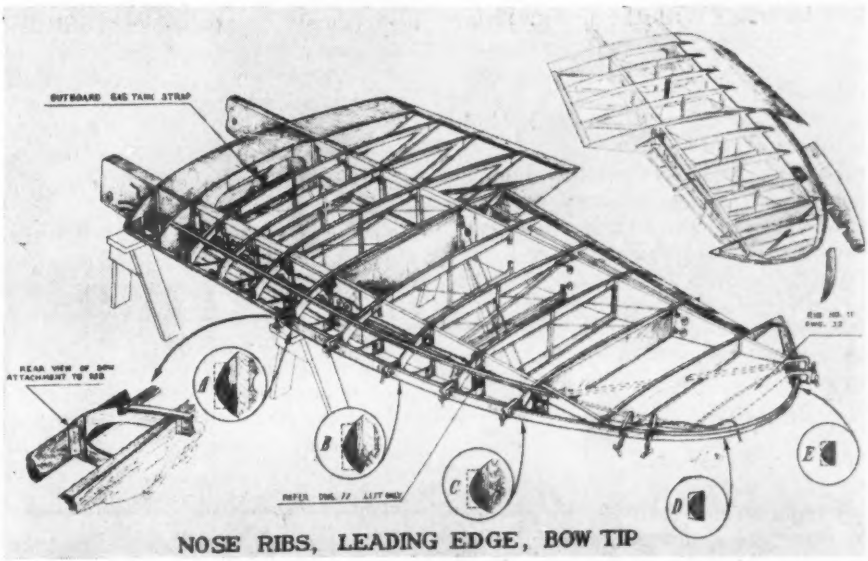
• **Wing Group**—Formed wing part, aileron fabricated and balanced, wing fittings and wires, and pitot tube and fittings.

Tools and equipment needed by the builder are merely those found in most well equipped work shops: a large work table or two 4 ft. saw horses (leveled and nailed to floor); large extension clamps; C-clamps; carpenter's level; trammel bar; and assorted small tools (wrenches, pliers, and screw drivers); safety wire and cotter pins.

Instructions sent with the kits are extremely clear and describe in detail the sequence of construction in logical steps. Stress is laid on the necessity of



RIB ATTACHMENT
METHOD OF NAILING & GLUING RIBS TO SPAR



NOSE RIBS, LEADING EDGE, BOW TIP

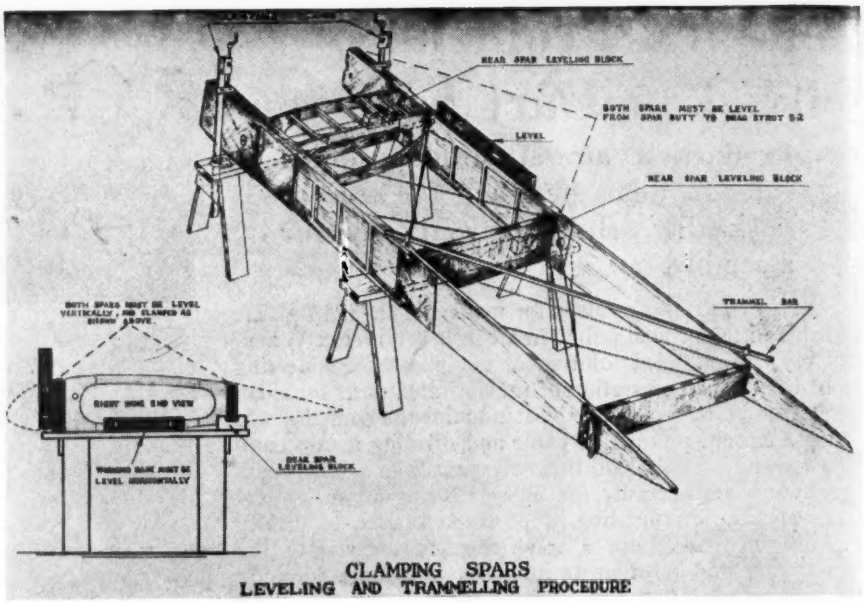
Photos top down: completed aircraft, exploded view and two sample construction drawings.

continual checking and counter checking of fit and trueness of all joints prior to final securing, together with overall supervision of the whole project by an A & E mechanic who will sign for work after final inspection by a CAA inspector.

Working drawings contain details of all complicated joints and fittings, describing visually the proper steps leading to correct positioning and fastening, truing and leveling (where necessary).

▶ **Complete Identification**—Prefabricated parts are numbered and/or marked at appropriate points to facilitate identification of joints and subassemblies. Markings include datum points, leveling and squaring references, and positions requiring particular attention during construction.

The whole program is laid out so that the builder will have, at all times, the maximum possible work space practicable at any given stage of construction, assuring maximum safety of the finished product. No joints or parts have been made "blind" so the chances of vital junctions being neglected is materially reduced.



CLAMPING SPARS
LEVELING AND TRAMMELLING PROCEDURE

▶ **Power Plants**—A variety of power plant installations are approved, with power ranging from 90 to 145 hp. Such engines as the Lamber 90, Ken Royce 90, or Warner 90 may be used with the basic kit without change.

Research Review *(continued from page 18)*

denly, they should return to their neutral position and damp any oscillations within one cycle.

• **Aileron Control System**—With the rudder held fixed and the stick or control wheel thrown hard over, the airplane should reach its maximum rolling velocity not more than 0.2 seconds later. This rolling velocity should be such that the quantity pb/2V is greater than 0.07 (in which p is the maximum rolling velocity in radians/sec., b is the wing span and V is the true airspeed in ft. per sec.).[5] At any speed below 80 percent of maximum level flight speed, this value of pb/2V should be attainable without exceeding a control force of 80 lb. for wheel-type and 30 lb. for stick-type controls. With the airplane flying at 110 percent of its minimum speed and the rudder locked, the airplane should not sideslip more than 20 degrees due to the yaw created by fully deflected ailerons.[6]

• **Dihedral Effect**—The rolling moment due to sideslip should vary smoothly with the sideslip angle and aileron control should always be necessary to depress the leading wing as the sideslip is increased. As the sideslip is increased, the tendency of the aileron to return to its trim position should increase. Low-wing monoplanes generally require four to eight degrees more dihedral than high-wing monoplanes to obtain the same dihedral effect.

• **Rudder Control**—The rudder should not require more than 180 lb. of force to: direct the airplane on a straight line with one engine inoperative and the other engine (or engines) at full rated power at all speeds above 110 percent of the minimum takeoff speed; overcome the adverse yaw of aileron deflections at any speed; meet the spin recovery requirements of the airplane.

• **Directional Stability**—The yawing moment due to sideslip should be such that right rudder is always required for a sideslip to the left and left rudder to slip to the right and at small sideslip angles the angle should remain substantially proportional to the rudder angle. The airplane should always tend to return from a sideslip regardless of the angle to which it has been forced without the use of the rudder.[7] Straight flight should be attainable by sideslipping at any speed above 140 percent of minimum without use of the rudder and with a single engine being inoperative.

• **Trim System**—Rudder and aileron trimming systems should be used if the control forces necessary for level flight are 10 percent greater than 80 lb. for aileron wheel (30 lb. for stick) or 180 lb. for rudder pedals at any speed between 120 percent of the minimum speed and the maximum speed. These trimming systems should be powerful enough to produce straight flight with one engine inoperative in multi-engine craft at speeds above 140 percent of minimum.

STALLING CHARACTERISTICS

The approaching stall should make itself felt unmistakably by developing gradually, by an increase in the pull force on the control column and by buffeting of the airplane. After the stall has developed fully, recovery should be possible by normal use of the controls. The airplane should not stall due to rolling or yawing moments when the airplane is at less than two degrees above the attitude required for a three-point landing.

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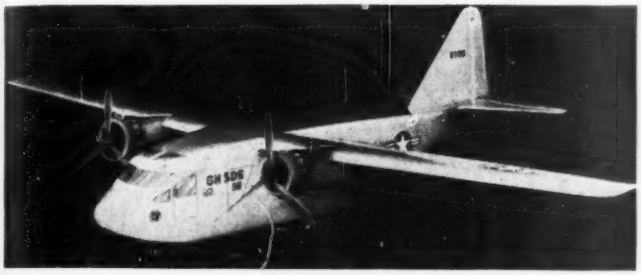
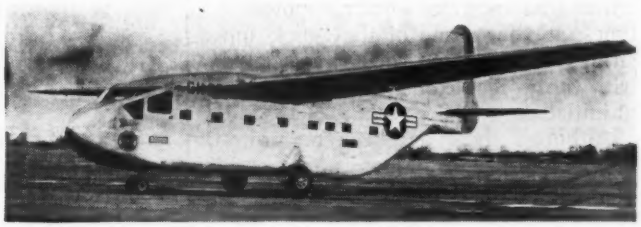




Assault aircraft (above) with engines becomes a cargo plane (left).

Cargo Plane Evolves From Glider

Chase Aircraft building new 8,000-lb. payload assault craft for Air Force; plans to produce similar powered version.

By ALBERT E. SMYSER, JR.

A new powered assault aircraft proposed by Chase Aircraft Co., Inc., Trenton, N. J. is hailed by its designers as a competitor for certain purposes of the Fairchild C-82 and similar cargo carriers for Air Force combat, glider towing, and training use.

Designated the MS-7, the projected plane will be powered by two Curtiss-Wright Cyclone 1820 engines of 1,350 hp. each; will have a span of 86 ft. 4 in.; length 53 ft. 5 in.; height 19 ft. 10 in.; and gross weight of about 25,000 lb. (8,000 lb. of which will be cargo).

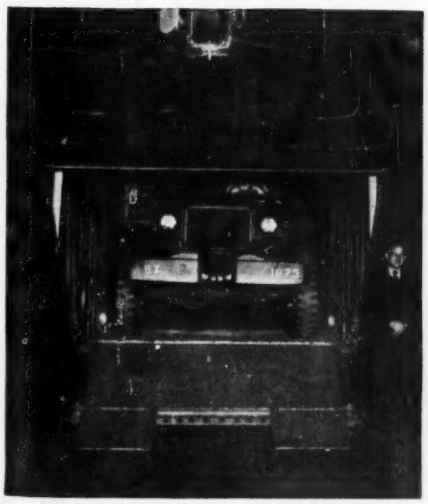
Although the designs are still in the preliminary stage, estimates of performance indicate that it will far exceed Air Force requirements for this type craft. Preliminary figures released by the manufacturer are: Takeoff over a 50-ft. obstacle (no cargo and 50 percent fuel), 852 ft.; landing over a 50-ft. obstacle (design gross weight with deceleration devices) 522 ft.; rate of climb at sea level (normal rated power) 1,550 ft./min.; service ceiling 23,000 ft.; service ceiling (single engine) 9,800 ft.; minimum speed for full control 69.5 knots (80 mph.); sea level cruise 165 knots (190 mph.); high speed 191 knots (220 mph.); range (optimum cruise) 738 nautical mi. (850 mi.); reserve, based on a 650-nautical mile range (746 mi.) one hour.

► **Glider Development**—The MS-7 is a development of the XCG-18A assault aircraft (towed) which is another Chase product. The XCG-18A or "Avitruk" is the first large assault glider using a combination of steel tube and metal skin throughout its structure. Its skin covering is entirely of .020 aluminum, except for some .030 gage used for fairings and fillets.

Wing section, identical in both the Avitruk and the MS-7, was developed by Michael Stroukoff, Chase president and chief engineer. It is an extremely thin section, somewhat similar to the NACA 23,000 series, but the Stroukoff section is modified so that it is much more efficient. Viewed externally, the wing bears some resemblance to that on an A-26.

Aerodynamic characteristics of this wing section for the speed, range, and intended aircraft utilization are said to be superior to those of any other known airfoil. High aspect ratio and thin section have combined to give clean lines to the plane.

The Avitruk includes advanced fea-



Cargo ramp when lowered permits easy access for Army ¾ ton truck (left), while short ramp facilitates unloading wheeled vehicles (right).

tures recommended by wartime experience and postwar research of Air and Ground Force development centers. The plane was developed through the use of the latest accepted methods of aircraft design and the construction is readily adaptable to mass production of either the powered or non-powered types, and has none of the "stick and string" construction often associated with the words "combat glider" by the uninitiated.

Although there has been no prototype of the MS-7 produced as yet, it is understood that the Air Force is interested in the design, and it is also known that Chase Aircraft is already planning to build a larger powered type for cargo work.

▶ **Complement Planes**—Use of a powered craft of the same basic design as the glider opens interesting fields of conjecture since it is feasible for the MS-7 to tow the XCG-18A. These planes may eventually be turned out as teams.

Air Force regulations no longer consider the glider expendable, so that all these assault craft are considered to be in the same category as any other planes of the line, and after an attack has been made it is an integral part of the operation to salvage and return the craft to their units as quickly as possible (special maintenance crews and power-plane "tugs" are assigned for this work).

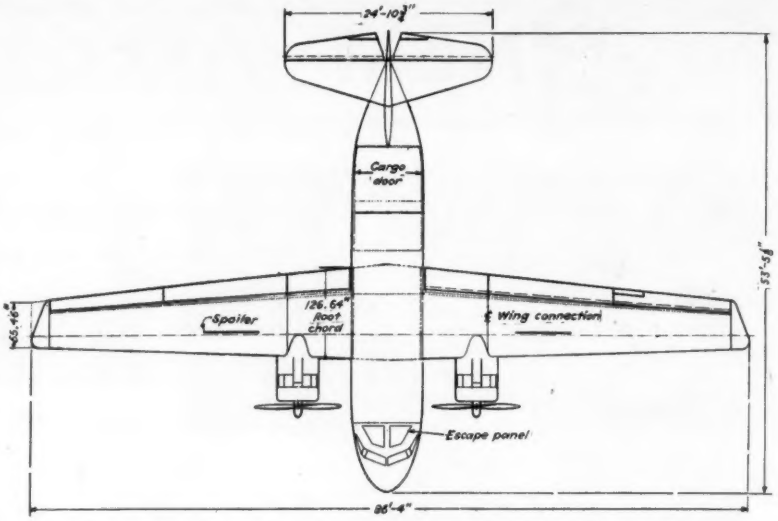
Development of the Avitruk was a true evolution of a type, as will be seen by reference to the accompanying photographs which show the difference between the current model (accepted by the Army) and an earlier one. The overall size of the plane has been increased and the fuselage contour has been changed and refined so that there is more space available for storage of large cargo.

▶ **Interior Features**—Salient features of the Avitruk are: Additional protection of crews during combat conditions and crash landings, furnished by the steel tube fuselage, and the fact that the crew's quarters are built above the level of the cargo floor so that in the event that the cargo breaks loose from its moorings it will pass under the fliers.

Controls have been arranged for accessibility and pilot comfort, gadgets have been held to a minimum, and only equipment necessary for safe, adequate operation has been installed.

Gear retraction and other major services are electrical, power being furnished by batteries and a small generator plant. Wheel brakes, together with the consideration that the craft has tricycle gear, give the plane unusually good ground handling characteristics.

Cargo ramp operates hydraulically with cable mechanism. Ground unloading under combat conditions is facil-



Plan view of the MS-7 shows engine positioning and simplicity of design.

SPECIFICATIONS OF MS-7

WING

Total wing area	7065 sq.ft.
Area each wing (net)	309.3 sq.ft.
Aileron area with tab	46.72 sq.ft.
Aileron tab area	1.82 sq.ft.
Aileron movement—up	20 deg.
—down	15 deg.
Aileron tab movement—up&down	8 deg.
Inboard flap area	38.22 sq.ft.
Outboard flap area	65.00 sq.ft.
Total flap area	103.22 sq.ft.
Flap movement down	60 deg.

EMPENNAGE

Total horizontal tail area	144.0 sq.ft.
Stabilizer area	89.3 sq.ft.
Elevator area with tab	54.7 sq.ft.
Elevator tab area	3.64 sq.ft.
Elevator movement—up	30 deg.
—down	20 deg.
Elevator tab movement—up	5 deg.
—down	30deg.
Horizontal tail incidence	0 deg.
Total tail area vertical	86.36 sq.ft.
Fin area	56.59 sq.ft.
Rudder area with tab	29.77 sq.ft.
Rudder tab area	1.96 sq.ft.
Rudder movement—left&right	30 deg.
Rudder tab movement—left&right	8 deg.

FUSELAGE

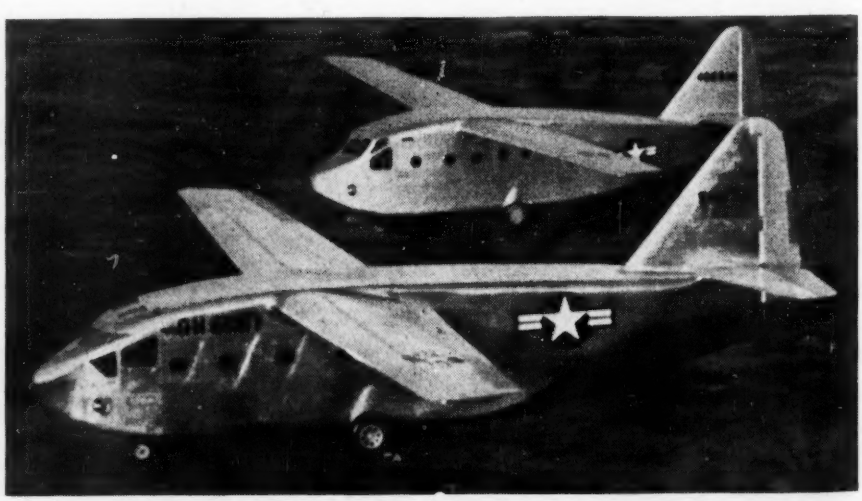
Cargo compartment—length	24 ft. 2 in.
—width	7 ft. 8 in.
—height	6 ft. 6 in.
Wheel base	177 in.
Wheel tread	124 in.
Fuselage length	50 ft. 9½ in.
Landing angle max	10 deg.

MISCELLANEOUS

Weight empty	13,600 lb.
Useful load	10,400 lb.
Gross weight	24,000 lb.
Airfoil sections—root	MS-016.19
—tip	MS-008.83
Washout at tip	4 deg.
Mean aerodynamic chord	103.5 in.
M.A.C. angle of incidence	2.4 deg.
Sweepback	2 deg. minus 1 min
Wing aspect ratio	10.55
Wing loading	21.94 lb./sq.in.
Dihedral angle—lower surface	3 deg.
Aspect ratio horizontal tail	4.3
Aspect ratio vertical tail	1.20

ENGINES

Wright Cyclone	R 1820
Hamilton Stand. Blades	6507A-O
Hub	23E50



Comparison shows evolution of Avitruck. Upper plane is XCG-14A which had only 5,000 lb. cargo capacity. Major changes were made in overall length of craft and aft portion of fuselage has been altered in contour.

...high octane gasoline

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● Creative men...engineers and engineering draftsmen...plan and build things to last. By the same token they look for instruments and equipment that will last. The tracing paper they draw on must be permanent. Their drawings must serve as lasting records. They may even have to use these same drawings years later to make new reproductions.

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One of these products is ALBANENE* Tracing Paper. Its 100% pure white rag fibers are stabilized and transparentized with Albanite, a K & E synthetic solid. ALBANENE is permanent. Free from oils, it cannot "bleed" nor lose its transparency with time. For complete details, write to your nearest K & E distributor or to Keuffel & Esser Co., Hoboken, N. J.

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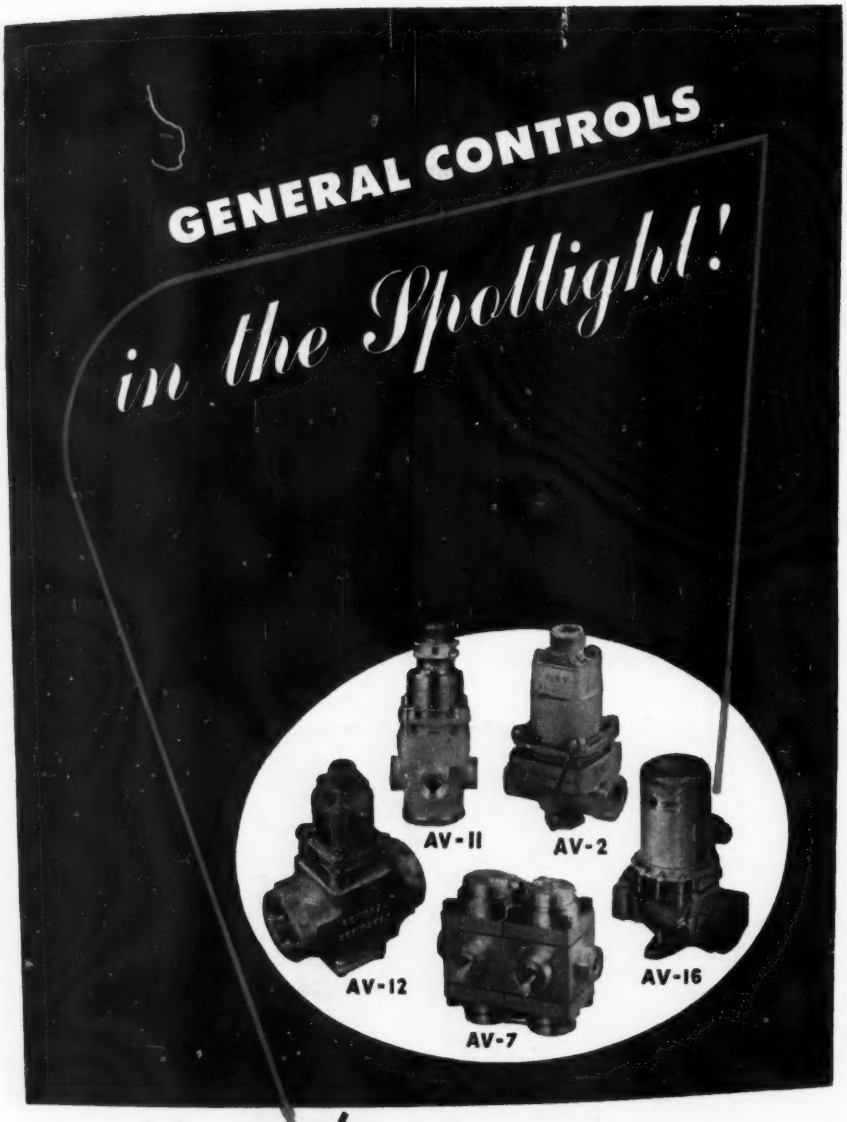

Unsurpassed *hi-g valves for aircraft**

*Trademark—"hi-g" —indicates positive operation in any position, regardless of vibration, change of motion, or acceleration. Automatic pressure, temperature and flow controls for every aircraft application. *Compact Size • Light Weight • Tight Shut-off High Flows with Low Pressure Drop • Long Life.* Outstanding performance and reliability merits recognition and acceptance. Specify General Controls with confidence. For complete specifications, request new Catalog 52C from nearest Factory Branch, or write direct to Factory.

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tated by an emergency retraction of the wheels which eliminates the need of driving vehicles down the ramp (jack pads are installed so that the plane may be lifted to permit lowering the wheels after such operation).

The XCG-18A major specifications are: span 86 ft. 4 in.; length 53 ft. 5 in.; height 19 ft. 10 in.; gross weight 15,500 lb.; cargo load 8,000 lb. Cargo compartment measures: 24 ft. 2 in. long, with clear inside dimensions given as 6 ft. 6 in. high and 7 ft. 8 in. wide.

It will be noted that the MS-7 and the XCG-18A have identical airframe dimensions which permits complete interchangeability of parts during manufacture, and is one of the reasons that Chase Aircraft feels confident of its ability to turn out both powered craft and towed planes in the same factory at the same time.

The company now has contracts for a service test quantity of Avitruks for the Air Force.

Cessna Outlook Bright Based on '47 Record

Reporting an increase of 69 percent in total volume of business in fiscal 1947 over the preceding year, Cessna Aircraft Co. predicts an even brighter prospect for their current year.

During the year ending Sept. 30, 1947, Cessna's net sales amounted to $10,708,918, most of which is directly attributable to its shipments of light two-place planes. These sales represented 27 percent of total deliveries of such planes in U. S. The net profit for 1947 was $371,965.

The company now is covering not only the two-place lightplane field, but shortly will be merchandising its new types of four-place personal planes together with four-place executive planes which have higher power and greater speeds. Also to be considered in 1948 is an Army contract for furniture which will aggregate $6,514,029 (nearly 65 percent of the net sales of last year).

To take full advantage of such diversified operations, Cessna has set up a separate sales organization to handle them and any others in which it may become interested later.

Sub-contract work providing additional volume for the company but which will not necessarily bulk large in the total volume of business includes: orders from Boeing for parts for their bombers and transport planes; hydraulic cylinders for International Harvester Co.; some machined parts for Oliver tractors; and hydraulic parts for John Deere combines. Increased specialization on farm machinery parts leads the company to expect the volume of such work to increase materially.

Early Tests Scheduled For New Flying Car

Wind tunnel tests are scheduled to be held at the University of Washington this month on a quarter-size model flying automobile designed by Moulton B. Taylor, Longview, Wash. Taylor heads a syndicate known as Aerocar Associates which was formed to develop the combination two-place airplane and three-place automobile.

In the meantime, construction is going ahead on the first unit of a factory building in which the Aerocar will be manufactured, and the company's own airstrip is being developed just outside Longview. A runway 2,000 feet long is now open and plans call for extending it to 4,500 feet. W. A. Taylor is owner of the landing field and will also build the factory.

▶ **Aluminum Car**—According to Moulton Taylor's preliminary engineering designs and his table model, the flying automobile will be 23 feet long and seven and one-half feet wide. It will be of aluminum construction and weigh approximately 1,600 pounds. The power plant will be a four-cylinder, air-cooled Franklin engine.

Moulton sees his Aerocar as having a cruising range of 300 miles at a speed of 100 m.p.h. Its landing speed is estimated at 40 m.p.h. Moulton estimates the ship will retail at about $3,250.

The automobile section of the Aerocar will be about the size and capacity of the Crosley. It will comprise the forward section of the airplane to which the airplane body will be attached.

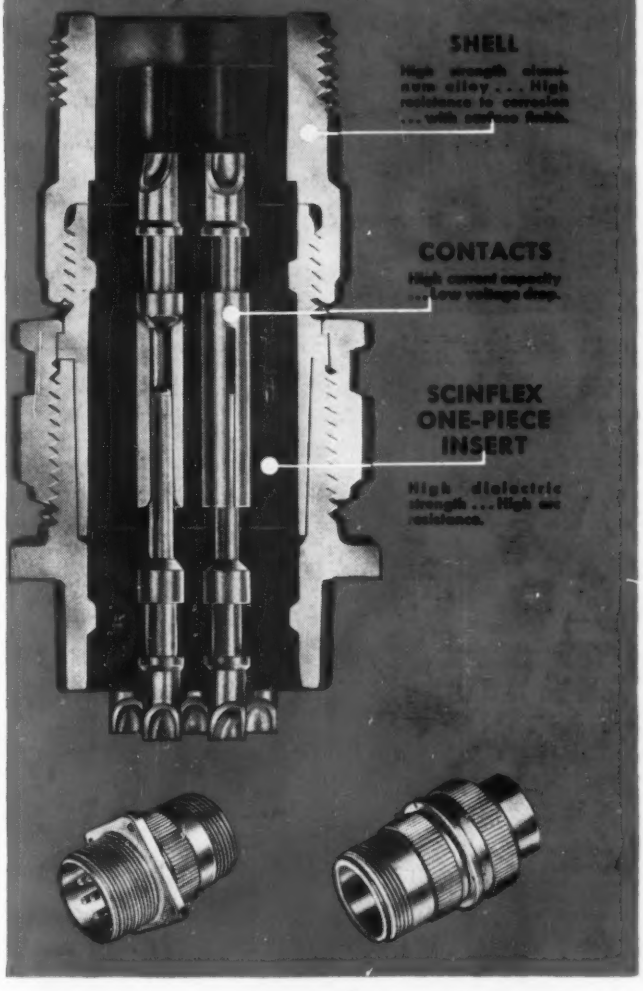
In flight, the Aerocar will be a high-wing monoplane with inverted tail, and pusher type. The propeller is mounted in the rear, aft of the tail, and its drive shaft will be coupled to the car's engine with a spline which will make disassembly of airplane from the car section a matter of merely slipping a pin that joins body to car. The wings will fold back against the body.

▶ **Take or Leave Plane**—A feature of the Aerocar is the fact the airplane section may either be left at the airport by uncoupling the car from it, or towed away behind the car, with wings folded. Moulton said he has provided for the following elements in his combined automobile and airplane:

Eye appeal, practical road speed, identical controls for flight and driving, automobile type gasoline, battery and accessories, ease of tire change, four-wheel hydraulic brakes, rear vision, baggage facilities, storage in an ordinary garage, adequate stability for hands-off flight, elimination of stalls and spins in flight characteristics, and an engine noise level comparable to that of an automobile.

BENDIX-SCINTILLA

the finest ELECTRICAL CONNECTORS money can build or buy!



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Bendix-Scintilla* Electrical Connectors are precision-built to render peak efficiency day-in and day-out even under difficult operating conditions. The use of Scinflex—a new Bendix-Scintilla dielectric material of outstanding stability—makes them vibration-proof, moisture-proof, pressure-tight, and increases flashover and creepage distances. Under extremes of temperature, from −67° F. to +300° F., performance is remarkable. Dielectric strength is never less than 300 volts per mil. The contacts, made of the finest materials, carry maximum currents with the lowest voltage drop known to the industry. The simplicity and soundness of design is demonstrated by the fact that Bendix-Scintilla Connectors have fewer parts than any other connector on the market—an exclusive feature that means lower maintenance cost and better performance.

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CONTINENTAL
Red Seal
ENGINES

"Honoring the Pilots of Today who are Developing the Airplanes of Tomorrow"

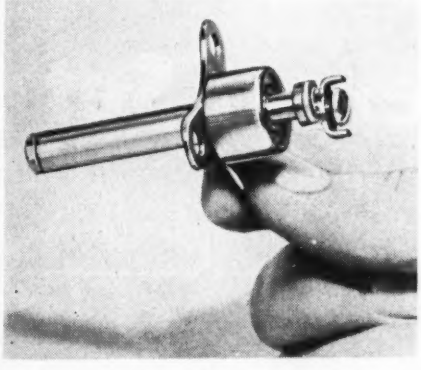
In the 20 years since it pioneered engines of horizontally-opposed design — the type which made possible the development of today's personal aircraft — Continental Motors has sponsored many programs for the advancement of flying. Latest in a series of such moves for the industry's long-range good is the company's establishment of a sterling trophy and a $10,000 purse in connection with the All-American Air Maneuvers at Miami. Continental Motors hopes, by this means, to foster the initiative so vital to technical progress, to the end that the planes of tomorrow may embody speed, safety, dependability — a degree of all-round usefulness surpassing that of even the finest planes of today.

Continental Motors Corporation
MUSKEGON, MICHIGAN

NEW AVIATION PRODUCTS

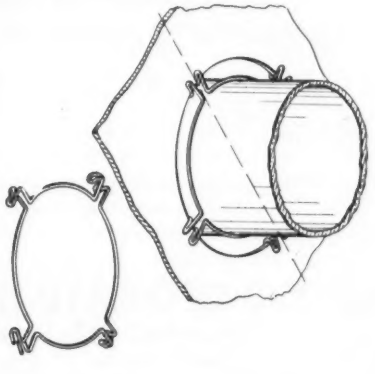
Aircraft Fire Detector

Designed to function at preset temperature, airplane fire detector is stated to actuate (under test specifications) alarm signal under allowable 5 sec. when exposed to 2,000 deg. F. direct flame and indicate "fire out" equally fast. Claimed is that false alarms cannot develop under vibration since contacts will not close without presence of heat. Number of wearable parts is reduced by having practically welded structure. Hermetically sealed, contact points and moving elements are protected from dirt and corrosive influence. Device features normally open circuits (no relays required); overall length is 2 1/8 in.; dia., 3/8 in.; and weight is approximately 1 oz. Maker is **Control Products, Inc.**, 306 Sussex St., Harrison, N. J.



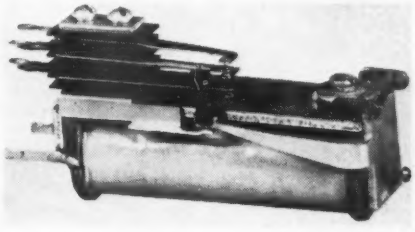
Reduces Hose, Duct Chafing

Development of mounting clip which, with spring tension, will hold tubing firmly clear of bulkhead aperture is announced by Glenn L. Martin Co. Device will be made and marketed by **Pepka Spring Co.**, 810 S. Waugh St., Kokomo, Ind. Used on Martin 202, clip is made from continuous piece of cold drawn music wire and is shaped roughly into circle, with grippers formed at four points to fit tightly against aperture edges. Duct is suspended in center of aperture without touching edges, and clip grasps duct tightly to minimize friction between the two.



Multi-Contact D.C. Relay

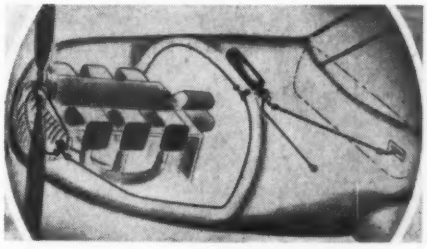
Handling as many as 12 circuits in wide variety of contact combinations, new multi-contact d.c. relay is announced by **Control Div., General Electric Co.**, Schenectady, N. Y., for use in electronic apparatus, communications,



and signaling equipment. Working from five basic arrangements, contact combinations can be stacked to satisfy intricate circuit switching requirements. Silver, palladium, or tungsten contacts can be had, depending on rating and life specifications. More than 500 different coils are available for use in relay, with ratings ranging from 1 to 250v. and from 0.1 to 26,000 ohms, to make possible close matching of coil voltage and resistance with rating of energizing circuits. Two-section or concentric two-winding coils are also available.

Lightplane Fire Safety

New packaged fire protection system for small planes developed by Walter Kidde & Co., and distributed by **Van's Air Service**, St. Cloud, Minn., includes CO_2 bottle, piping, and discharge outlets. Kits are now available for Navion and will be offered soon for Stinson 150, Beech Bonanza, and other small craft.



Resistors for "Tight-Spots"

Suitable for aircraft electrical installations, ceramic-cased midget wire-wound resistors made by **Clarostat Mfg. Co.**, 130 Clinton St., Brooklyn, N. Y., are intended for tight spots and for facilitating point-to-point wiring. Marketed as Greenohm Juniors, units feature wire winding on fibre-glass core, with axial bare pigtail leads clinched to ends, placed in steatite tube and filled and sealed with special cold-setting inorganic cement. Because of absence of organic material, it is claimed that resistor will not blister, crack, or change shape. Standard-junior (Type C7GJ) measuring 1 3/4 by 7/16 in., with 2 in. leads is rated at 7w. and is available in values from practically zero to 5,000 ohms max. Smaller type (C4GJ), measuring 1 by 7/16 in., is rated at 4w., with maximum available resistance of 1,000 ohms.

Information Tips

Instrument Parts Refinishing

For aircraft instrument service shops, **Hyprez Div., Engis Equipment Co.**, 431 South Dearborn St., Chicago 5, Ill., offers data on its Hyprez diamond compounds for lapping and polishing instrument pivots, bearings, and shafts, etc.

Data on Safety Nuts

Of interest to aircraft designers, production men, and maintenance personnel are three folders, issued by **Elastic Stop Nut Corp. of America**, 2330 Vauxhall Road, Union, N. J., describing machine screw, lightweight, and heavyweight Elastic Stop Nuts, each folder featuring hex nuts in regular and thin height types. Nuts are listed in steel, plain and plated; dural, plain and anodized; and brass, plain and plated. Part numbers and weights are shown for all types and sizes, and Army and Navy aeronautical equivalent part numbers are also shown.

Bearing Design Details

Section on aircraft bearings is included in 260-page ball bearing catalog K issued by **Federal Bearing Co.**, Poughkeepsie, N. Y. Publication contains 100 pages of engineering data and interchangeability and conversion tables. Data section lists information on calculation of loads, bearing load conditions, load modifying chart, lubrication and care of bearings, and various formulas, tables, and equivalents.

Spot Welding Equipment

For production engineers, four page catalog describes new double-acting hydraulic welding gun and booster producing over 3,000 spots per hr., more than 100,000 from one point. Issued by **Dalhart Engineering & Mfg. Co.**, 14827 E. Jefferson Ave., Detroit 15, Mich., publication shows blueprints of eight typical designs of guns that may be adapted to wide variety of work and various thicknesses of metal, also sectional detail of booster.

Information on Alloy Steels

Issued by **Joseph T. Ryerson & Sons, Inc.**, P. O. Box 8000-A, Chicago 80, Ill., is 24-page booklet listing company's steel products. Included are data on sizes, shapes, finishes and conditions of medium carbon, high carbon, case hardening, free machining, carbon manganese machinery steel, heat treated alloys, and tool steels. Also contained are tables of AISI and SAE standard steel compositions.

Data on Stainless Electrodes

Bulletin 1047 titled "What Electrode to Use to Weld Specified Stainless or Alloy Steel," is offered by **Arcos Corp.**, 1515 Locust St., Phila. 2, Pa. Subject is divided into sections for easy reference, and provides information on base metal identification of solid and clad materials, recommended types of electrodes, special considerations involving corrosion, and heat or strength properties, as well as suggestions for welding dissimilar metals. Also included is chart of trade names of stainless alloys produced by country's mills.

Capacitor-Housing Delivery

Stated as previously held up by steel shortage, availability of motor-capacitor housing is announced by **Aerovox Corp.**, New Bedford, Mass. Device, accommodating standard 1 3/8 × 3 1/4-in. unit, is heavy-gage metal, completely covering and protecting capacitor and terminals, no auxiliary caps or brackets being required. Housing fits motor contour snugly, providing strong shockproof installation.

a new Ferret Set by Snap-on

A new design... strong... adaptable... they squeeze into close places easily

(All units 3/8" Square Drive)
1/4" and 5/16" Single Broached Sockets
11—Double Broached Sockets from 3/8" to 7/8"
1—Speeder Wrench
1—8" Ratchet
1—Sliding Tee
1—Nut Spinner
1—Universal Joint
3", 6", and 12" Extensions
—Complete in a metal box, 19½" x 5¾" x 1⅜" — specially designed for this set. Rich red enamel finish.

Yes, a new Ferret set . . . new in design . . . way over par in performance — and they're twice as strong as you would expect such slim, slender handles and thin-walled sockets to be.

They squeeze into tight places and get those hard-to-reach nuts and bolts that defy the ordinary type wrench. Newly designed by Snap-on engineers, they make quick easy work of many of the tough jobs on modern motors and engines.

Be sure to ask your "Snap-on" man to show this set the next time he calls.

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INTERNATIONAL DIVISION: KENOSHA, WISCONSIN, U. S. A.

CAA Plane Rental Proposal Gains Widespread Approval

Agency plans to dispose of war surplus trainers used by inspectors and rent modern lightplanes.

By ALEXANDER McSURELY

Proposal by CAA to divest itself of its operationally expensive war surplus SMJ trainer planes used by inspectors for travel about the country and to rent new postwar personal planes for the same purposes from fixed base operators appears likely to be approved with no indications of serious opposition in any Washington quarter.

Powerful factor in the rental proposal's chances is the fact that the plan is originally credited by Washington sources to Rep. Karl Stefan (R., Neb.) chairman of the House Appropriations sub-committee which will pass on CAA budget requests. It was reported also that the economy features of the plan won favor with the Bureau of the Budget.

▶ **Use 230 Planes**—CAA's inspectors and officials now have in use approximately 230 airplanes ranging from Douglas DC-4s and one Lockheed Constellation (not in flying condition) down to 75 hp. two-place Ercoupes. Approximately 95 of these are two-place North American SNJ Navy training planes, powered with 450 hp. Pratt & Whitney Wasp Jr. engines which CAA inherited from war surplus. CAA also has some elderly Beech model 17 biplanes, and some "beat-up" Fairchild 24s.

Rep. Stefan has suggested that CAA get rid of all but about 30 of its planes and rent other planes from fixed base operators as they are needed. But CAA contends it needs about 90 planes for use in experimental projects and by patrol pilots checking landing aids, airways, etc. These are two and four-engine planes, including besides the DC-4s, C-47s, and twin Beeches and twin Cessnas, which are equipped with instruments, which the ordinary airplane rental service would not provide.

▶ **Fee Recommended**—John Morris, chief of CAA's aircraft control service, has recommended a fee of approximately $10 an hour be paid by CAA for rented aircraft, with a guarantee of 200 to 250 hours use per year which would insure the operator of a return of approximately $2,000 to $2,500 annually for the use of each airplane, in addition to whatever he could make on it and when it was not in use by CAA.

Morris estimates that the SNJS cost approximately $25 an hour to operate, although CAA has been supplied with a large stock of surplus replacement parts for these planes which are warehoused at Oklahoma City.

The SNJS are generally regarded as a serious offender in airplane noise, although second to the BT-13s, which CAA originally had from war surplus. In view of Administrator T. P. Wright's vigorous campaign for airplane noise reduction, it is believed advisable in official quarters for members of the CAA staff, also, to fly in more quiet airplanes.

▶ **Seek PAC Advice**—Whether the $10 an hour rental figure would prove adequate, probably will depend on the type of equipment which CAA wishes to rent for that figure. Eastern operators generally are getting about $8 an hour for solo time on 85 hp. two-place airplanes with variations reported at different fields. One midwest operator gets $25 an hour for rental of a Beech-place Bonanza with a minimum of three hours a day.

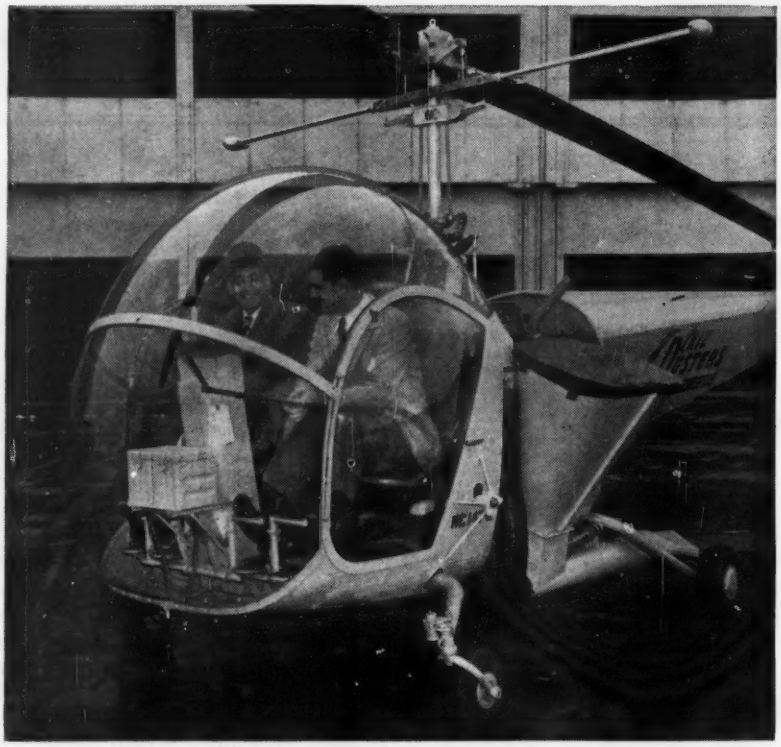
It is understood that Administrator Wright has asked members of the Personal Aircraft Council of the Aircraft Industries Association, for their opinions on the plane rental proposal. Member companies have generally indicated approval as a less desirable alternative to outright purchase of new postwar personal type airplanes providing the CAA will pay an equitable rental figure which will enable the renting operators to show a profit margin. Tentative discussion calls for the operator to do all the maintenance and repair on the aircraft rented. This would eliminate in large measures need for CAA aircraft repair operations which have been a subject of severe criticism by the aviation industry as government competition with private enterprise.

If the rental plan is authorized, as it appears, it will be watched closely by both CAA and the industry and its records will provide interesting information in several channels:

• It is expected to prove data showing the economy of operating the smaller horsepower, postwar planes which should provide necessary evidence to justify CAA purchase of such planes

DAWN PATROL ON THE HACKENSACK

The Dawn Patrol Seaplane Base at Secaucus, N. J., a few minutes from Manhattan, operates eight aircraft—two Luscombes, two Aeroncas, a Piper Cub, a Porterfield, a Stinson, and a Grumman amphibian, used to fly live lobsters down from Maine. In addition to GI Bill of Rights and regular flight instruction, Dawn Patrol operates a thriving charter business.



NEW FLORIDA HELICOPTER OPERATION

Believed to be the first helicopter to operate commercially in Florida, is the new Bell 47-D utility craft purchased by Dixie Dusters, Inc., Winter Haven, which has previously been using two fixed wing planes. Photo shows George C. Petrouleas, former AAF fighter pilot and head of the firm, and C. G. Petrouleas, secretary as they took delivery at the Bell factory at Buffalo. First use will be for dusting citrus and flat crops, and next spring the company expects to use it for dusting and spraying to control mosquitoes and water plants which clog irrigation ditches and waterways.

for its use, at a later time.

• The same data will probably be the first record of such a large scale light airplane fleet operation for one consumer, and as such will be studied by commercial potential large scale users of light aircraft.

• It will offer proof of a claim often made by the fixed base operators segment of the industry that they can do maintenance and repair of aircraft under the free enterprise profit system, better and more economically than it can be done at government bases.

• The records may offer a government test tube of large scale light plane rentals, providing additional data for private concerns which have been on the verge of entering this field.

• If the rental program does justify CAA purchase of personal type planes in the future, it could open the way to stimulating development of improved light aircraft, by CAA contracts. It is probable that lightplane manufacturers would lend a more favorable ear to CAA efforts at plane development if the development took the form of specifications for new airplanes which the government agency was buying, in fair quantity.

Standard Warranty For New Aircraft

Proposed standard form of warranty for new airplanes has been circulated by the Personal Aircraft Council of Aircraft Industries Association to its member companies, which differ from most existing warranties in two major points:

• **Period of Warranty**—Most present warranties are valid for varying periods dating from delivery at factory. Proposed standard would be valid from date of delivery to distributor or his designee.

• **Including Parts Not Manufactured By The Airframe Maker**—Most existing warranties exclude parts and products not made by the airframe maker, but it is pointed out that the decision as to whether to make or buy a component is the responsibility of the airframe maker and he thus has responsibility for the component whether he makes it or buys it.

Reports from a questionnaire circulated show that warranties of eight companies reported all cover a 90 day period except one, which is for 60 days (Beech) while five companies couple this time limit with a number of hours flown on the new airplane, the warranty to expire at whichever condition occurs first (Beech, Convair and Republic, 100 hr.; Aeronca 90 hr. Piper 50 hr.) Others reporting were Cessna, Fairchild, and Waco. Five companies maintain a stock of replacement parts for definite period, Aeronca 10 yrs.; Fairchild 8-10 yrs.; Convair and Piper, 7 yrs., Republic 3 yrs., while the others endeavor to stock or fabricate replacement parts for any aircraft which are still in use.

The proposed warranty does not include tires, motors, ignition apparatus, starting devices, generators, batteries, instruments or other trade accessories, usually covered by the manufacturers of these items, in separate warranties.

North American Loss Estimated at $28,259

North American Aviation's preliminary statement for its fiscal year that ended Sept. 30, 1947, indicates a net loss of $28,259 after tax carryback credits of $11,700,000. The figures take into account the write-off of the Navion loss, put at $8,646,886.

This contrasts with NAA's fiscal 1946 profit of $4,001,061, realized chiefly from war contract termination claims amounting to more than $52,000,000 of its $55,818,518 worth of sales. In fiscal 1947, company sales were $20,508,991.

Like others of the major companies, NAA in closing out its year has transferred to earned surplus the balance of its reserve for contingencies established during the war. In NAA's case, this amounts to $4,412,222.

No indication is given in NAA's announcement of the price it received when it sold the Navion to Ryan Aeronautical. A possible hint that the buying price was not too high might be gained from the fact that at the end of NAA's 1946 fiscal year, the company listed development, engineering, tooling and a portion of initial production costs of the Navion program at $3,379,764.

A favorable outlook for the current year is reflected in NAA's figures for its final quarter: sales of $8,659,616, about 40 percent of the year's total. At the end of the year, backlog was $203,284,730, as against $184,810,261 at the end of the third quarter.

Gets Distributorship

Appointment of Pacific Airmotive Corp.'s Linden, N. J. base, as Pratt & Whitney engine distributor and approved overhaul base for Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, and Union Co., N. J. has been announced by Wallace O. Leonard, PAC president.

Cessna's New Model Features More Speed

Using the new Continental C-90 engine which develops 90 hp. at 2,475 rpm., Cessna Airplane Company's 1948 two-place model 140 is quieter and shows improved performance, Dwane Wallace, Cessna president, has announced.

Top speed is over 125 mph. Cruising speed is five miles an hour greater than that of the 1947 models 140 with 85 hp. Continentals, although the 85 hp. Continental requires 100 more rpm. to attain that power.

Substantial noise reduction is claimed partly because of slower rpm. making for improved propeller efficiency, less engine and propeller noise, and partly due to efficient exhaust mufflers, which reduces cabin noise, Cessna claims to a new low level for personal aircraft.

► **Few Differences**—Outwardly the plane shows little difference from the 1947 model 140, except for a wide horizontal stripe painted on the vertical tail surfaces. Cabin interior is finished in two-tone color with new, easily legible labels over dials, controls and switches on instrument panel.

Both right and left windows open in the 1948 model, and the throttle is relocated for better accessibility and knee room. Cabin and seat upholstery is wool and leather, with no sag seat cushions padded with foam rubber. The 1948 Cessna model 120 two-place plane will continue to use the 85 hp. Continental as its powerplant.

► **Engine Change**—Despite the engine change there is no increase in price from the 1947 to the 1948 model 140. Both models will use the vanadium steel spring landing gear developed by Cessna, and improved this year, the maker reports, to further smooth out rough or cross-wind landings.

Polykol Agency

Skymotive, Inc., fixed base operation at Chicago Douglas Airport, has been named distributor in 10 midwest states for Polykol, a new plastic surfacing material for protection of metal aircraft, by the Polycraft Corp., Los Angeles. The finish is described as an invisible coating sealing the surface against oxidation or corrosion, or harmful effects of gasoline, exhaust stain and handling smudges. It is described as resilient enough to give protection of an enamel and not crack or break off when the undermetal gives or bends. It is applied by spraying after chemical cleansing processes prepare the surface. In addition to a transparent colorless finish, Polykol is provided in eight colors.

BRIEFING FOR DEALERS & DISTRIBUTORS

DECISION REVERSED—J. M. W. Chamberlain, Akron, who has been fighting a legal battle with nearby residents who are seeking to keep his Chamberlain Airport closed, reports that he won the second round by unanimous decision of the Ninth Ohio District Court of Appeals, reversing a lower court decision. The lower court had granted an injunction to Russell Firestone and other property owners, against the airport on complaints of nuisance, property depreciation, and similar charges. In effect the reversal held that airplanes have a right to fly lower than 500 ft. in landings and takeoffs, regardless of trespass over adjoining private property.

AIR OIL STUNT—A new lightplane landing gear strut made by Lucient Gruss, Middletown, Ohio, has been demonstrated recently at Dayton, Ohio, by Gerald Chatterton, Dayton aviation sales operator, who has exclusive national distribution of the new device. Gruss is credited with earlier invention of the pneumatic strut used on many of today's largest airplanes, and the airspring for automobiles. He claims that the new strut will make it possible to lighten fuselage structure at the point of landing gear attachment since the combination of air and oil shock absorption used is far more efficient than conventional lightplane gears. It will also make possible shorter landing gears with easier cabin access and egress for passengers. Observers at a flight demonstration of the gear installed on a Piper Cub trainer, said the plane was "dropped in" repeatedly from several feet above the ground and settled without a bounce, and that taxi tests over rough ground showed superior dampening of bumps. Chatterton reports that several lightplane manufacturers have already indicated interest in the new strut. Low maintenance, (strut carries one year guarantee) is said to make up for slightly higher initial cost.

LOUISIANA RYAN AGENCY—Notice of W. M. Eberbart, owner of Louisiana Aircraft, Baton Rouge municipal airport, as Ryan Navion dealer for Louisiana and Mississippi has been announced. Eberbart has a flight training school, aircraft and engine repair facilities, and represents Piper for the same area. Ryan also named John B. Rudy Co., Grand Central Air Terminal, Glendale, Calif., and Bakersfield (Calif.) Airpark as direct factory Navion dealers.

MAITLAND NAMES—Col. Lester J. Maitland, for whom Maitland Field, is named, has been appointed Wisconsin state aeronautics director, by the state aeronautics commission at a $5,000 salary as of Feb. 1. Maitland, and his partner, Albert F. Hegenburger, both then Army Air Service lieutenants, made a trail-blazing flight in a Fokker C-2 tri-motor, the Bird of Paradise, from Oakland, Calif., to Honolulu, in 1927. Hegenburger is now an Air Force major general.

AIRPORT HOPPER—Northrop's tri-motor transport, the Pioneer, has been demonstrating its excellent short field landing and takeoff characteristics in small unpaved airfields and airstrips over Southern California, entering many fields which have not been used previously by anything but very small aircraft. Even with one engine out, the 12½ ton tri-motor has been flying in and out of the small fields without difficulty, the test pilots report.

NO FOUR-PLACER—Texas Engineering & Manufacturing Co., Dallas, maker of the two-place Swift 125 personal plane, will devote its full attention to making that plane, and will not enter the four-place competition in which virtually every other lightplane company is engaged now or will be. When TEMCO purchased the manufacturing rights of the Swift, after bankruptcy of Globe Aircraft Corp., Ft. Worth, they also acquired partially completed engineering on an experimental four-place personal plane design, but apparently have decided to shelve this design, at least for the present. TEMCO president, Robert McCullough, reports there has been an increase in Swift 125 sales every consecutive month since TEMCO purchased the manufacturing rights last June, and predicts a more substantial increase in sales in 1948, due to the completion of a nationwide Swift dealer organization. A new fuel vent system will be incorporated on all future production Swifts, and new landing light installation in the leading edge is also available. An auxiliary fuel tank which adds more than 130 miles to the Swift's cruising range, bringing it well above the 500 mile mark, is also being offered as optional equipment.

ROBOT BONANZA—A black-and-yellow four-place Beech Bonanza has been equipped with radio control and is being used by the Beech Aircraft Corporation in a dive test program, to determine the effects of excessive air speeds on various parts of the airplane without endangering a test pilot in dives beyond the plane's normal design limiting factors. The company believes it is the first commercial plane to be used in such a radio-controlled dive test program.

—ALEXANDER McSURELY

AVIATION WORLD NEWS

Joint Argentine Line Experiences Deficit

BUENOS AIRES—The Argentine adventure in an airline owned jointly by the state and private investors has not had too successful a financial experience so far this year.

Of three internal airlines and one overseas airline established under this mixed ownership pattern, one of the most active and most widely used, ZONDA (Northwestern Zone Airline of Argentina), came through the first six months of 1947 with an overall loss of $750,000 (U. S.) at a yearly loss rate of one and one-half million dollars.

ZONDA stock pays its holders a guaranteed 5 percent dividend, so this loss will have to be met by the federal government—in this case the Secretary of Aeronautics.

► **Expenses Exceed Income**—It is noted that income from traffic development, tickets, mail, etc., for ZONDA has been much lower than the direct working expenses, that is, flight operations, land operations and passenger service. The former amounted to only 1,320,000 pesos (ARG) against 1,970,000 pesos of direct expenses. General expenses of 660,000 pesos were added.

Under the unique setup of the line, which operates a considerable fleet of Douglas DC-3s and DC-4s and handles considerable traffic in Argentina, after two years of deficit the Secretary of Aeronautics has the right to take over the direction of the company and ascertain the cause.

The Argentine International Airline, known as FAMA, is formed on the same principles, but has not been in the field long enough to have a fair tryout. Greatest hazard of the investors is that while their profit is protected, their capital investment is not.

This new hangar at Moron Airport, Buenos Aires, is used for the DC-3s and DC-4s employed mostly for domestic service by the 1½-year-old ZONDA airline. Probably one of the largest hangar-repair shops in use in South America, it measures 165 x 210 x 225 ft., covering approximately 12,300 sq. ft., and includes subterranean departments. Four three-ton, overhead cranes, machine shops with a large inventory of repair parts, and a Douglas testing unit are some of the modern features. Moron is the present national airport at Buenos Aires. A newer and larger field, Ezeiza, is under construction.

Isla Verde Airport Plan Meets Navy Opposition

SAN JUAN—The Navy Department is opposing the proposed Isla Verde international airport near San Juan, to be constructed by the government of Puerto Rico at a cost of more than $15,000,000.

Rear Adm. Daniel E. Barbey, commander of the Tenth Naval District, has objected to construction of the airport at the site selected on the grounds it would interfere with operation of the Navy's nearby radio station, erected in 1944 and described by Barbey as "the Navy's communication center for the entire Caribbean area."

Plans for the airport specify construction of a runway about 1,500 ft. from the radio station. Naval officials believe resulting noise and radio interference would compel the Navy to abandon installations for which the Federal government paid about $5,000,000.

► **Station Transferred**—The wireless receiving station was transferred from San Juan to its present site near Isla Verde to avoid interference from industrial plants in the San Juan area and the Isla Grande airport, center of civilian aircraft operations.

The government of Puerto Rico has invested about $100,000 in plans and surveys for the Isla Verde international airport. Acquisition of about 1,500 acres for the project is contemplated. The Puerto Rico planning board already has approved a master plan of airports which includes the Isla Verde field, with a high priority for its construction.

The Navy's decision surprised government circles in San Juan. Under the Federal airport construction program, $800,000 had been allocated to Puerto Rico as an advance to start preliminary work, and the Puerto Rican legislature had approved several appropriation acts to provide more than $5,000,000 for the project.

Meanwhile, in formal ceremonies, the Navy recently turned over the Isla Grande airport, near San Juan, to the Puerto Rican authorities who will assume responsibility for its control, operation and maintenance until the proposed Isla Verde airport issue is settled.

The Navy had operated the Isla Grande facilities since its construction during the war. Thirty airlines plus military craft, have been using this airport with 3,400 airline landings recorded since 1946.

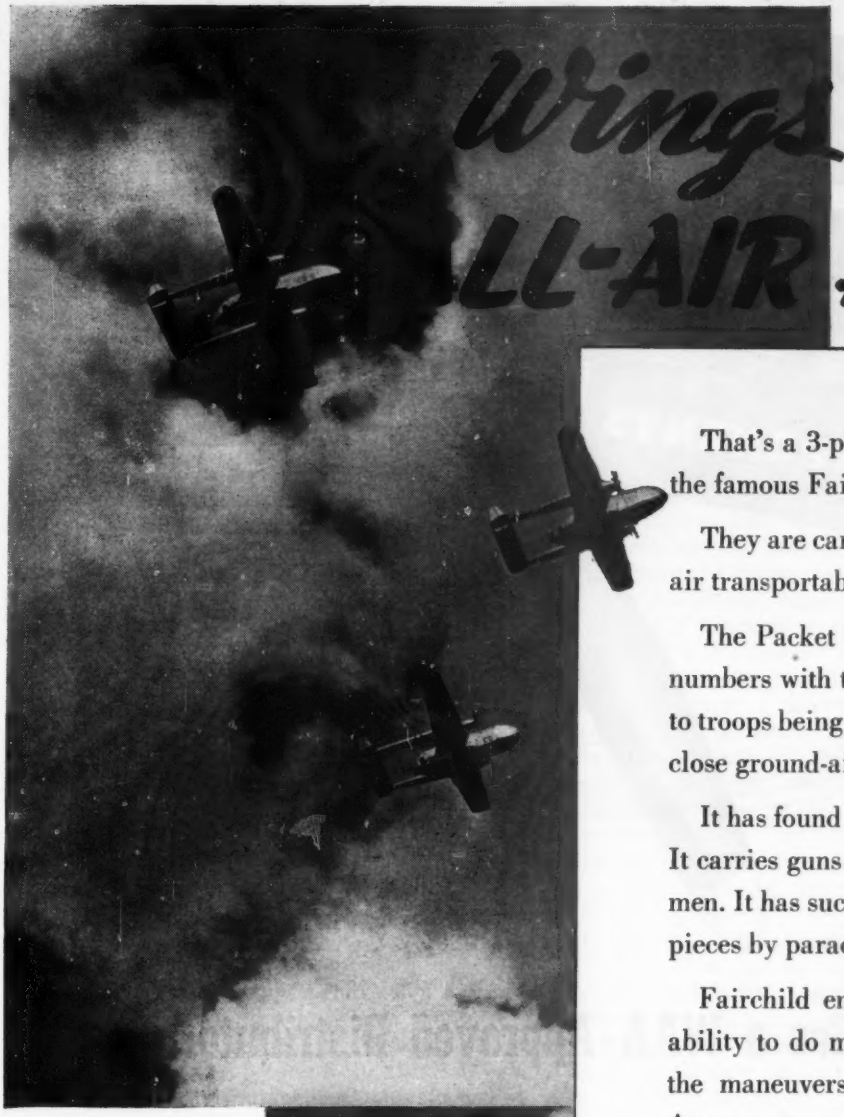
Traffic Increases Noted In Philippine Figures

MANILA—Latest civilian aeronautics statistics in the Philippines reveal that passenger traffic has increased a hundred fold since before the war, while for every pound of air-freight in 1941 thirty pounds are carried today.

The bulk of the domestic load is being carried by Philippine Air Lines, Inc., in their 50 aircraft. PAL. recently doubled its fleet through purchase of FEATI, only other major airline in the islands. The purchase enabled PAL. to extend its routes considerably while offering passenger rates which for the most part are 25 percent below prewar levels. PAL.'s fleet of DC-4 "Skymasters" will shortly be augmented by Douglas DC-6s, to be used exclusively in overseas service between Manila and San Francisco (Oakland), via Guam and Honolulu, and between Manila, Hong Kong and Shanghai.

Meanwhile Commercial Air Lines, Inc., which heretofore had operated locally on a nonschedule basis, has been granted a limited schedule permit to operate on any domestic route two times a week. In addition CALI makes regular flights to a number of Far Eastern points.

The past summer also marked the inauguration of Northwest Airlines service between the U. S., the Philippines, China and Japan, over what is known as the Aleutian route. Pan American Airways now maintains a five day a week service with the United States.



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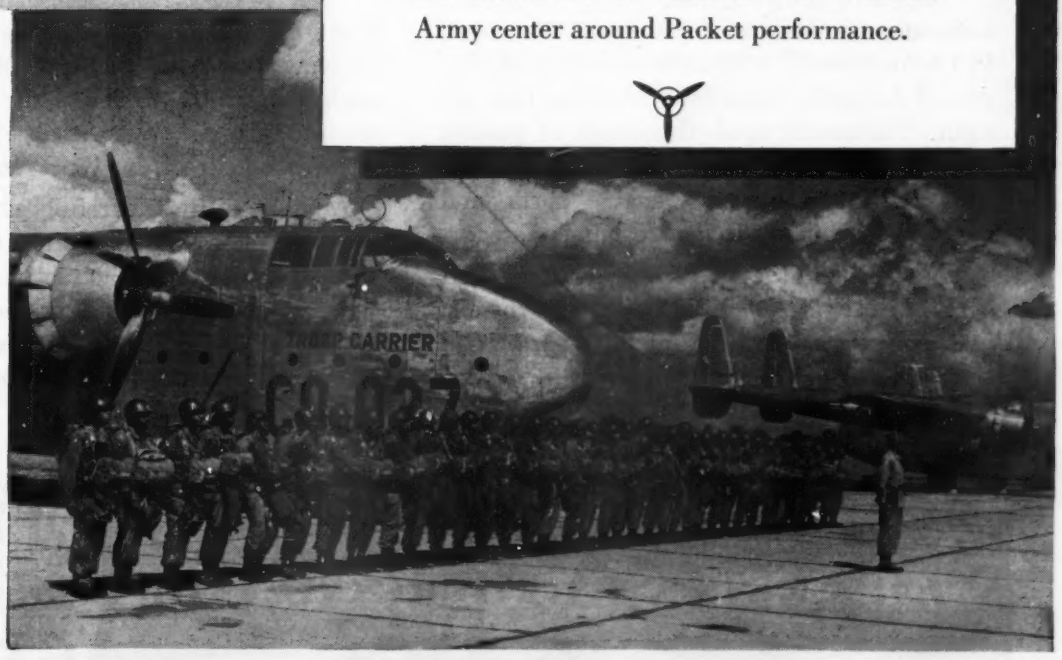

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Equipment Trusts Loom Larger In Proposals for Airline Financing

With legal difficulties still to be surmounted, carriers study substitute device in which separate corporations would buy planes and lease to operators.

With the need for additional airline financing becoming more acute, it is likely that equipment trusts may assume a prominent role in the industry's capital structure.

Widespread adoption of the equipment trust device among the airlines has been slow in developing largely through the inertia that frequently surrounds legal and technical obstacles when encountered for the first time. Among the legal difficulties noted by financial institutions is the liability that may accrue to the equipment trust trustee, conditional seller, or chattel mortgagee in the event of an accident. This liability could be removed by an amendment to the Civil Aeronautics Act.

Another major issue is the status of the property in the event of bankruptcy. The secured creditor is not considered properly protected unless he is able to repossess the operating equipment immediately. As railroad equipment trustees have the right of immediate possession in case of bankruptcy, there is no reason why the Bankruptcy Act can not be modified to give the same protection to airline equipment paper.

At present there is no satisfactory method of recording interests in engines and spare parts which, in the aggregate may run as high as 25 percent of the airplane cost.

In the international field, much more remains to be accomplished in order to encourage equipment trust financing. A system of international recording of financial interests in aircraft would be most reassuring. Toward this end, the International Civil Aviation Organization is currently circulating a draft convention providing for such recording as well as the recognition of attendant rights to aircraft flying in the international air routes.

▶ **Successful When Tried**—To the limited extent already used, equipment trusts have met with considerable success in the air transport industry. Pan American World Airways was the first and thus far the only line to resort to true equipment trust financing among the airlines.

In January, 1939, the company sold $2,500,000 in 4 percent equipment trust certificates to two Eastern banks. These funds were applied toward the purchase of Boeing Clippers. Pan American had a 30 percent equity in these planes, which provided a wide margin of safety for the banks. Provision was made for the serial maturity of these certificates over a five year period. Actually, they were retired before maturity and the planes continued in service well beyond their estimated "useful" life. The principle of this arrangement revolves around "pay-as-you-go"—thus making possible the liquidation of the obligation during the estimated life of the equipment.

The principle of trust financing among the airlines was present when American Airlines, late in 1935, utilized a loan from the Reconstruction Finance Corporation to pay for its first fleet of DC-3s, and which gave the carrier the jump on the other lines in this type of equipment.

The commercial banks refused to advance any funds on this type of transaction, maintaining that the industry was too unstable to warrant the risk. RFC thereupon entered the picture and advanced the money at 5 percent on a chattel mortgage on the planes, with American making a 40 percent equity payment. This loan was amortized on a monthly basis.

▶ **Railroad Experience**—Equipment trust financing has been highly successful in the railroad field. Basically, the inherent strength of this medium is found in the indispensable character of rolling stock—freight and passenger cars along with locomotives. A railroad might have a valuable right-of-way, but is worthless without the equipment to move the traffic. Similarly, it may be said that the airlines, while having valuable "rights-of-way"—in the form of certificates of convenience and necessity, would be in a hopeless position without planes with which to implement operations.

It is little appreciated but when railroad equipment trust paper was first conceived there were many obstacles encountered and reasons advanced why this instrument would never succeed. However, in the light of practical operating experiences, adjustments were made and the necessary elements fell in their proper places.

▶ **Substitute Proposal**—To meet the more immediate equipment requirements of a number of the airlines and to obviate the legal questions raised thus far, the equipment trust principle may soon appear in a new guise. There is considerable discussion being given to the formation of separate corporations to hold title to newly acquired equipment which would be leased to the airline concerned.

The equity of this new corporation would be owned by the airline and rental payments would be sufficient to amortize the indebtedness of the equipment corporation over the useful life of the planes. This proposal was actually advanced as part of Capital Airline's capital re-adjustment plan earlier this year, but failed to materialize.

Another probability is the creation of a government owned agency to buy equipment and lease it to the airlines on a regular amortized basis. This may be done through RFC or a specially created agency to concentrate on this activity. The advantage of this arrangement lies in obviating any immediate capital outlay by the airline.

▶ **Indebtedness**—In recent years, the rapid expansion of airline capital structures has seen the extensive creation of various forms of indebtedness. Such obligations have appeared in debentures, commercial loans both secured and unsecured, and of a short or long term nature. This has developed to the point where in many instances 40 to 50 percent of capitalizations have been provided through borrowing. This high debt ratio has proven to be unsound when confronted with adverse operating conditions.

Most of this debt was originally created to finance equipment purchases but not always employed for this purpose. Interestingly enough, because of the legal objections found with equipment trusts, many unsecured term loans were developed. It was believed that by imposing certain restricting clauses, adequate protection would be afforded the lender. Actually, however, this has not always worked out as intended. In some cases, money originally intended for plane purchases were diverted to operating purposes. Of greater importance, the borrower lost much flexibility in any future financing proposals.

Equipment trust instruments, in one form or another, designed for a specific purpose, supplemented by additional equity financing, may yet prove the answer in supplying the needed funds to the airline industry. —**Selig Altschul**

Western Air Lines Blueprints Future With Five-Year Program

Carrier sees smaller dependence on mail pay; better financial outlook results in plans to buy five more Convairs; continued inflation spiral expected.

By CHARLES ADAMS

A detailed blueprint for continuing its financial comeback of the past nine months with minimum dependence on mail pay has been drawn up by Western Air Lines in answer to a Civil Aeronautics Board order issued last spring.

The carrier told CAB that except for an extension from Yuma, Ariz., to Phoenix, it has no desire for additional route mileage. It added that mail pay requirements, both on a dollar and plane mile basis, should be less in 1948 than 1947 and should decline each year through 1952. Biggest threat to a prosperous future was seen in TWA's drive to "invade" the Los Angeles-Las Vegas segment and to remove restrictions on the Los Angeles-San Francisco run.

► **Other Reports**—Western's report to the Board paralleled others made by Capital Airlines (PCA), Colonial, Northeast and Chicago & Southern. The Board told each of these carriers to explain their alleged increasing dependence on mail subsidies. The lines also were ordered to analyze their route patterns to determine whether uneconomic characteristics are present and whether operations not yet inaugurated should be postponed indefinitely.

Since abandoning transcontinental ambitions early last year, Western's fortune has been mostly good. Sale of its Denver-Los Angeles route to United Air Lines late last summer yielded Western a net profit of around $1,800,000 and put the company well in the black for the nine months. Although a net deficit of over $600,000 is anticipated during the fourth quarter, Western's earnings for the year should be substantial.

► **Seeks More Convairs**—Firmer finances and brighter prospects for the future have resulted in a move by WAL's management to reinstate some of the orders for new equipment which were cancelled in November, 1946. At that time, Western reduced its commitment for Convair 240s from 20 to 10 and its contract for DC-6s from 10 to 5.

Western now discloses plans to boost its order for 10 Convairs to 15. The five additional planes would cost $375,000 each (including spare engines) and would be placed in service around the middle of 1949. When Western first ordered 20 Convairs in the spring of 1946 the purchase price per unit was about $225,000.

► **Future Fleet**—Equipment now operated by WAL consists of 12 DC-3s, 5 DC-4s, 1 cargo C-47 and 1 cargo C-54. Plans call for selling the cargo C-54 early this year and delivery of 10 Convairs by July 1.

Availability of Convairs is expected to make 4 DC-3s surplus after July 1, and Western hopes to sell them for a total of $170,000. Expected delivery of five additional Convairs by July 1, 1949, will make WAL's five DC-4s surplus, and the carrier plans to sell them for about $825,000. Thus the WAL fleet in the summer of 1949 should consist of 15 Convairs, 8DC-3s and a cargo C-47.

► **Airport Problem**—The Convairs will be fitted into Western's schedule pattern on the basis of an average block-to-block speed of 190 mph. Scheduling of the carrier's DC-3s is now based on a 156 mph. block-to-block speed, and the DC-4s have a 194 mph. block-to-block speed. Recent survey trips by top WAL executives disclosed serious airport problems involving use of the Convairs north of Salt Lake City on routes 19 and 52, but these difficulties can be corrected.

Western told CAB that difficult terrain and a shorter haul than the industry average have caused higher expenses. (Western's average passenger haul is 399 miles against 495 for the 16 domestic trunklines.)

► **Traffic Survey**—During the first nine months of 1947, 64.91 percent of Western's revenue passenger miles were flown over route 63 (Los Angeles-Seattle); 26.28 percent over route 13 (San Diego-Salt Lake City); 7.96 percent over route 19 (Salt Lake City-Great Falls, Mont.); and 0.85 percent over route 52 (Great Falls to Lethbridge, Alberta). Both routes 19 and 52 are marginal when considered in the light of present-day load factor requirements for break-even operations, WAL said.

The carrier told CAB it is "extremely optimistic" about the future of route 63 segments north of San Francisco to Portland and Seattle on which service began Aug. 1. Adverse publicity resulting from the DC-6 accidents affected the development of traffic on this as well as all other WAL routes during the fall.

► **Foreign Routes**—Present plans call for inauguration of Los Angeles-Mexico City operations on July 1, 1948, with initial flights made nonstop with DC-4s. Extension of route 52 north from Lethbridge to Edmonton, Alberta, is hoped for about the same time. Rights for operation of both routes must be obtained from the Canadian and Mexican governments. Western believes activation of the two foreign links will greatly benefit its domestic route structure.

Except for the foreign extensions, Western has instituted service to all but three of the points to which it is certificated. It is prepared to begin flights to San Bernardino, Cal., as soon as it gets permission to use the Army's airport there.

► **Small Towns Problem**—But Richfield and St. George, Utah, offer different problems. Both have populations of less than 4,000, and WAL seriously questions the economic feasibility of serving the points even if adequate airports become available. In similar reports by Chicago & Southern and Northeast, doubt was expressed that service could be instituted, or, in some cases, continued at a number of points on their systems without some sort of substantial subsidy.

Western believes its present 60 cents a ton mile mail rate is inadequate despite the addition last spring of a "minimum capacity factor" which placed an artificial floor under the loads carried. The minimum capacity factor boosted the carrier's 1947 mail pay from an anticipated $424,000 to more than $1,000,000.

► **New Formula Sought**—WAL would like to have its mail pay hitched directly to its passenger load factor—a formula already set up by CAB for Pioneer Air Lines and Continental Air Lines. "Such a formula," the carrier declared, "would stabilize our gross monthly income and eliminate the six months starvation-

six months prosperity cycle.

Despite last spring's adjustment, Western said it would need $1,530,000 in additional mail pay for 1947 to earn an 8 percent return on its investment. In 1948 the carrier believes it will need about $1,258,000 additional to earn an 8 percent profit and in 1949 about $782,000 additional. After 1949 WAL believes it can make an 8 percent profit under the mail pay formula now in effect.

▶ **Need to Decline**—Total mail pay needed for 1946 to earn 8 percent was $3,110,000 (27.6 cents a plane mile), Western told CAB. Need in 1947 will be $3,151,000 (31.6 cents a plane mile); in 1948, $2,854,000 (27.1 cents a plane mile); in 1949, $2,632,000 (21.9 cents a plane mile); in 1950 and 1951, $1,496,000 (12 cents a plane mile); and in 1952, $1,272,000 (10.2 cents a plane mile).

Western thinks that with the help of the more efficient Convairliners its mail pay need will decline despite a continued upward spiral of costs. An employe pension plan which may be placed in effect next July will cost about $175,000 a year for the first ten years.

▶ **Costs Rise**—Wage level in 1948 is expected to be 10 percent higher than in 1947, and the 1949 level will be up another 10 percent, Western believes. Gasoline costs will jump 2 cents a gallon this month and another 2 cents in July, while oil prices will be up 2 cents a gallon this month and another 6 cents by next October.

Present outlook is for Western-Inland to finish 1947 with a net profit before taxes of around $1,244,000 despite the $671,000 loss expected in the last quarter. Revenue passenger miles are expected to total 195,000,000 this year against 214,000,000 in 1946, an 8.6 percent drop.

In 1948, under the present mail formula, Western anticipates a net loss before taxes of $65,000 and 205,000,000 revenue passenger miles. In 1949 the carrier foresees $730,000 net profit and 242,000,000 revenue passenger miles; and in 1950, $1,597,000 net profit on 267,000,000 revenue passenger miles.

CAB Disturbed By AAA Mail Pay

All American Aviation has been granted a mail pay increase which will have deficits going back to May, 1945, but the Civil Aeronautics Board, in ordering the boost, warned of a possible backfire.

The Board noted that "the increasing cost to the government of (AAA's pick-up operations) without any apparent corresponding benefit to the commerce, the postal service or the national defense, is a matter of grave concern." These facts, CAB continued, will be given full consideration in the pending Board investigation (instituted last May) to determine whether AAA's pick-up route certificate should be suspended in whole or in part.

▶ **New Rate**—Mail rates set for All American are: for the period May 28, 1945, to Aug. 31, 1946, 48.5 cents a revenue plane mile; for the period beginning Sept. 1, 1946, 54.70 cents a plane mile based on present schedules of two roundtrips daily over the entire 1,522-mile route. A rate of 79 cents a mile will be applicable to any segment over which the Post Office may in the future reduce mail schedules to one roundtrip daily.

During the 12 months ended Aug. 31, 1946, AAA's former mail rate of 50.26 cents a mile actually yielded the carrier 41.02 cents a mile. CAB's latest order will result in additional mail payments aggregating around $500,000 from May 28, 1945, through last month. The Board allowed All American 7 percent profit on its recognized investment for the 15-month period ended Aug. 31, 1946, and an estimated 8 percent profit thereafter.

▶ **Beechcraft Purchase**—Partial replacement of single-engine Stinson Reliants with twin-engine Beech D18CTs in November, 1946, resulted in increased plane mile costs. CAB said in view of the age of the Stinsons and the increasing difficulty of meeting safety and operations requirements with that type of plane it would find AAA's decision to replace the Stinsons a reasonable one.

But the Board emphasized that except for safety considerations substitution of $100,000 Beechcrafts for the Stinsons would hardly have been justifiable for rate-making purposes in view of the comparatively small mail and express loads carried on AAA's system.

British Deficit

Further proof that U. S. carriers have not been alone in showing deficits for the 1946-47 period is provided in the latest statement of British European Airways, one of Great Britain's three major state-owned air carriers.

From Aug. 1, 1946, when BEA was established, to Mar. 31, 1947, the carrier lost about $8,400,000, according to a summary of operations published as part of a government white paper. In that period, the company, which operates Great Britain's internal and continental services, flew 72,000 passengers about 30,000,000 revenue passenger miles.

James Ray, Adams Submit Resignations

Resignations of James G. Ray as vice president of Southwest Airways Co. and Alvin P. Adams as board chairman and chief executive officer of California Eastern Airways were announced on the West Coast late last month.

A feeder airline pioneer, Ray expected to establish a consulting service for short-haul carriers following his resignation from Southwest, which is to become effective early this month. Under Ray's guidance, Southwest carried 35 percent of all passengers handled last year by U. S. feederlines.

Andre De Saint Phalle, head of the New York investment banking firm bearing his name and No. 2 stockholder in California Eastern, has become president of the Transcontinental Airfreight Line. Adams, who took over active management of the freight carrier last fall following the resignation of president J. J. O'Brien, will remain on CEA's board of directors. The post of board chairman was abolished.

Other personnel developments:

- **American**—David E. Nopper has been named eastern regional director of public relations with headquarters in New York.
- **Northeast**—D. W. H. Mackinnon, for the past 18 months chief inspector for National Airlines, has become NEA's director of engineering and maintenance.
- **Pan American**—Philemon R. Dickinson has been appointed assistant to the regional director for the United Kingdom and Europe.
- **Slick Airways**—Charles P. Graddick, formerly cargo director of United Air Lines and more recently assistant to President Earl F. Slick, has become vice president in charge of sales and traffic for the airfreight line.
- **United**—Norval B. Rader has been named assistant director of traffic and sales and Eugene H. George has become UAL's European director, replacing Robert M. Ruddick.

ALPA Attacks Case Against AA Pilot Sisto

License revocation hearings involved American Airlines check pilot Charles Sisto, who engaged the gust lock of a DC-4, sending it into a 7,500-ft. dive over Mount Riley, Tex., Oct. 8, ended late last month in Los Angeles amid charges that the flyer was being "knifed."

The ALPA said informal testimony in preliminary investigations of the DC-4 incident were being used to "hang" Sisto at the formal hearing in Los Angeles, adding that the pilot was "pressured" into resigning from American Airlines. ALPA warned it might refuse to cooperate voluntarily in future accident inquiries if such practices continue. The prosecution declared that Sisto on Oct. 15 voluntarily signed a statement admitting his activation of the gust lock sent the plane into a dive.

Post Office Sees Air Mail Profit in 1950

The Post Office department estimates that the air mail postal deficit will mount from $14,859,469 during the 1947 fiscal year to $22,118,000 for fiscal 1948 at the existing five cent per ounce rate.

In testimony before the Air Mail Subcommittee of the House Post Office Committee, headed by Rep. Edward Rees (R., Kans.), the Department opposed an increase in the rate on the grounds that the impetus to volume of the five cent rate will justify it by the 1949 fiscal year. In that year, the Department estimates that its air-mail deficit under the five cent rate will be only $8,378,000, compared with an estimated $11,146,000 deficit under a six cent rate, and a deficit of $25,953,000 under an eight cent rate.

For the current 1948 fiscal year, the Department calculates that its deficit under a six cent rate would be $20,861,000, or $1,257,000 less than under the five cent rate. At an eight cent rate, the deficit would be an estimated $23,894,000. By 1950, the Post Office predicts a profit on air mail operations of $9,088,000 under the five cent rate, a profit of only $358,000 if the rate is boosted to six cents, and a deficit of $27,774,00 if the rate is raised to eight cents.

National Science Drive Revived in Congress

Sen. Elbert Thomas (D., Utah) plans to revive the drive for a national science foundation in this session of Congress.

The measure passed by the last session of Congress was vetoed by the President who objected primarily to the administration laid down for the foundation. It would have been composed of a board of part-time experts and headed by a director elected by members of the board. The President indicated apprehension that the outside interests of the board members, most of whom would probably have connections with major corporations, would govern their actions on the government agency.

Thomas, an administration Democrat, believes that the President's apprehension is unwarranted, and points out that boards of education throughout the country are composed of part-time members. He plans to confer with the President before introducing a new bill, in an effort to reach a compromise on the administration issue. Thomas believes that there is some likelihood that Congress would authorize a foundation headed by a Presidentially-appointed director, as long as policy-making powers were lodged with the board of experts. However, if the President insists on granting policy-making authority to either a presidentially-appointed director, or a board of full-time presidentially-appointed government employes, there appears slight chance for enactment of national science foundation legislation. The sentiment in Congress is that this type of organization would be too deeply enmeshed in politics.

Two other measures, designed to promote scientific development in the national defense field, introduced by Chairman Walter Andrews (R., N. Y.) of the House Armed Services Committee, are due for Congressional action this session:

Legislation authorizing the Army, Navy, and Air Force to detail scientific and technical personnel to private plants and laboratories for periods up to six months.

Legislation authorizing the Army, Navy, and Air Force to designate panels of civilian experts to deal with specific scientific or technical projects and to sustain the cost for research, developmental, or test facilities essential to the execution of contracts.

CAB Issues Reports On WAL, AA Accidents

Probable causes of two Western Air Lines accidents in the mountains of Southern California during November and December, 1946, and of an American Airlines crash at Michigan City, Ind., have been determined in recently-issued CAB reports.

The pilot's action in making an instrument letdown without previously establishing a positive radio fix probably caused the crash of a WAL DC-3 against White Mountain, 14 miles south of Lebec, Calif., on Nov. 13, 1946, according to CAB. Contributing to the pilot's action were conditions of severe static, wind in excess of anticipated velocities, preoccupation with an unusual amount of radio conversation, and inoperation of the Newhall, Calif., radio range. All 11 occupants of the plane were killed.

▶ **Pilot Error**—CAB also attributed the crash of a WAL DC-3 on Cuyapaipe Mountain—three miles from Mt. Laguna, Calif.—on Dec. 24, 1946, to pilot error. The report said the flight was conducted at an altitude which would not clear obstructions "due to an error by the pilot in determining his position with respect to Laguna Mountain." All 12 occupants of the plane were killed.

Significantly, the WAL planes involved in both the Lebec and Mt. Laguna mishaps hit the peaks only 75 ft. below the crests. No evidence of malfunctioning of the aircraft, engines or radio was found in either case.

▶ **Engine Failure**—Accumulation of carburetor ice following loss of power in both engines as a result of fuel starvation probably caused the American Airlines DC-3 crash at Michigan City, Ind., on Dec. 28, 1946, in which the pilot and co-pilot were killed. Shortly before the accident, the crew radioed that both engines were going bad and that they were descending to look for an opening in the overcast.

As the plane dropped into the overcast, carburetor ice formed rapidly and could not be eliminated. Reason for the fuel starvation which crippled both engines has not been determined.

New Labor Scale

A proposal that employees earning $300 or more a month in salary or fees be exempt from the overtime requirements of the Fair Labor Standards Act has been presented by the aircraft industry to wage-hour administrator William R. McComb.

Industry views were given by Edward Jam Croswell, counsel for Glenn L. Martin, at hearings in progress in Washington on McComb's proposals for revising regulation 541, which defines executive, administrative and professional employees and outside salesmen. These groups, and persons engaged in local retailing, are not covered by the wage-hour law.

Croswell stated that among the major aircraft manufacturers he spoke for at the hearing were Glenn Martin, Curtiss-Wright, United, Bell, Piper, Sperry Gyroscope, Fairchild, Avco's Lycoming division, Republic and Ranger on the east coast. Also Douglas, Lockheed, Boeing, Northrop, North American and Consolidated Vultee on the West Coast.

Air Force Shifts

Five more top Air Force generals have received changes of assignments in what the Air Force terms "routine transfers." These are believed to be only the forerunner of about 15 such changes scheduled within the next few weeks. Latest changes:

- Major General Albert F. Hegenberger, to office of deputy chief of staff for materiel, special weapons group.
- Major General Howard M. Turner, from commanding general 10th Air Force to deputy commanding general, Air Defense Command, Mitchel Field, N. Y.
- Brigadier General Thomas C. Darcy, from assistant chief of staff, Barksdale Field, La., to commanding general, Williams Field, Chandler, Ariz.
- Brigadier General Aubry L. Moore, from commanding general, Williams Field to commanding general, Goodfellow Field, San Angelo, Texas.

SHORTLINES

▶ **Aerovias "Q", S. A.**—Has asked CAB for a foreign air carrier permit to fly between Havana, Cuba, and New York via Washington. The Havana-based company, which now operates between Cuba and Key West, Fla., would use DC-4s on the new link.

▶ **Chicago & Southern**—States that CAB's action suspending inauguration of service by C&S between Memphis and Kansas City (AVIATION WEEK, Dec. 8) was illegal and has asked the Board to set aside the order. CAB's original stay order was issued less than 72 hours before C&S was to open the new link, and the company said the Board's "unprecedented" action resulted in a loss of some $15,000 in cash plus "unwarranted damage to our reputation."

▶ **Mid-Continent**—Reports net loss of $33,589 in November compared to a loss of $8,506 in the same month last year despite a 6 percent gain in operating revenues. Company flew 5,742,134 revenue passenger miles on a 59.28 percent load factor in November, 1947, against 5,766,846 revenue passenger miles and a 58.49 percent load factor in November, 1946.

▶ **National**—CAA has granted official approval for company use of ILS with a 300-ft. minimum ceiling. . . . Carrier completed its first year of operations to Cuba on Dec. 15 with a record of 15,000 passengers flown into Havana and 20,000 flown to the U. S. via the Tampa and Miami gateways.

▶ **Northwest**—Has amended its petition for a mail pay increase filed last month (AVIATION WEEK, Dec. 22). Company states it needs $2,900,000 in additional compensation for the 14-month period between Nov 1, 1946, and Dec. 31, 1947, to break even on its domestic system. Besides the $2,900,000, a reasonable return on the company's investment is requested. Petition filed last month asked $1,400,000 (plus a fair profit) for calendar 1947 only. Request for $1.54 a ton mile mail pay (plus a fair return) on and after Jan. 1, 1948, was not changed in the new petition.

▶ **Trans-Canada**—Hopes to inaugurate twice-weekly flights between Montreal and Bermuda with 40-passenger DC-4M by early spring. Communications facilities are now being installed and the traffic staff is assembling in Bermuda.

▶ **United**—With December figures estimated, company expects 1947 revenue passenger miles to total 1,227,775,000, up 14.4 percent over 1946. Revenue plane miles were up an estimated 9.5 percent to 59,886,000; freight up 127 percent to 10,172,000 ton miles; express up 18.5 percent to 6,787,000 ton miles; and mail down 11.4 percent to 8,528,000 ton miles. November revenue passenger miles were down 7 percent from the same month last year.

CAB SCHEDULE

Jan. 5. Hearing on Board's investigation of Consolidated Airfreight Tariff Agreement. (Docket 2719.)

Jan. 19. Hearing on requests of Braniff and Chicago & Southern for removal of restrictions on Chicago-Houston service. (Docket 1681 et al.)

Jan. 27. Hearing on Taca, S. A., foreign air carrier permit renewal and amendment case. (Dockets 3016 and 3017.)

Feb. 2. Hearing on Board's investigation of airfreight rates. (Docket 1705 et al.)

Feb. 4. Hearing on Continental Air Lines' route consolidation case. (Docket 576 et al.)

Feb. 16. Hearing on St. Louis-Twin Cities route applications of Eastern Air Lines and Mid-Continent Airlines. (Docket 1050 et al.)

Feb. 16. Hearing on additional service in New England Area. (Docket 1279 et al.)

Feb. 21. Hearing on Mid-Continent's Minot, N. D.—Regina, Saskatchewan, route case. (Docket 628.)

Mar. 1. Hearing on additional service on Hawaiian Islands. (Docket 2390 et al.)

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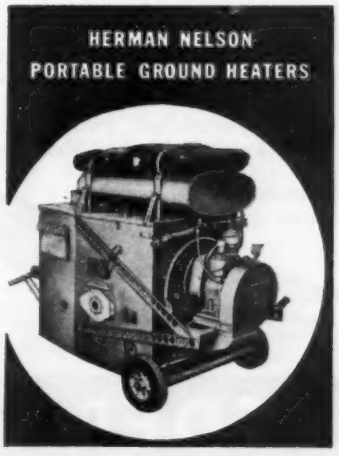

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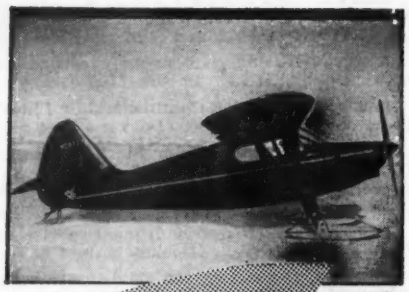

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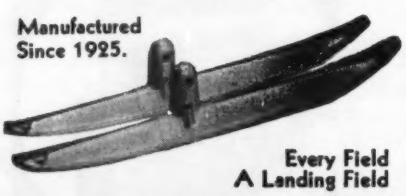

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Northeast Registers New Stock Issue

Northeast Airlines' plans to finance the retirement of $1,418,304 worth of notes with the proceeds from a new stock offering have been disclosed in a registration statement filed with the Securities and Exchange Commission.

The issue—83,333 shares of no par value convertible preferred—will be offered initially to the company's common stockholders at the rate of one new share for each six common shares now held. NEA's new stock will have an annual cumulative dividend of $1 per share from Jan. 1, 1948.

▶ **Atlas Notes**—Northeast plans to use the proceeds to pay off all but $400,000 of the notes now held by Atlas Corp. and the latter's wholly-owned subsidiary, Salta Holding Corp. As of Oct. 31, 1947, the notes aggregated a total of $1,812,304.

In connection with the stock sale, Atlas has agreed to subscribe for any shares of the new stock not purchased by other stockholders. Atlas now owns 100,000 shares (20 percent) of Northeast's common stock.

▶ **Convair Purchase**—The SEC statement said Northeast has agreed to buy five Convair 240 transports and parts for delivery this year. Total base price of the equipment is $1,575,000.

NEA declared expansion of its route system is necessary and unless the expansion takes place either through certification of new links or merger with another carrier it will be "extremely difficult" to operate profitably without government aid in the form of "need" mail payments.

▶ **Losses This Year**—The carrier added that at present it is not equipped to operate all new routes applied for, nor does it have sufficient capital to do so.

Northeast reported that except for 1940, 1942 and 1944 it has not realized sufficient revenues to meet operating expenses since 1938. Net loss for the first 10 months of 1947 totaled $999,941 against a net loss of $43,946 for calendar 1946.

American, TWA Sign New Wage Pacts

Details of new contracts between TWA and its 1,000 pilots and co-pilots and between American Airlines and its ground personnel were disclosed late last month. Both agreements provide substantial wage increases.

The new TWA pact, which becomes effective Feb. 1, 1948, was signed by David L. Behncke, Air Line Pilots Association president, and Robert H. Biron, Jr., the airline's vice president-industrial relations. Domestically, pilot pay was increased about 10 percent on Constellations and around 5 percent on DC-3s. Co-pilot wages were boosted six percent.

▶ **Foreign Flights**—TWA pilots in international service will receive a guaranteed 70 hours flight pay monthly, plus overtime at $10 an hour for DC-4 equipment and $11.50 an hour for Constellations. Previously, overseas pilots had a fixed monthly salary of $1,100.

The agreement also created the new position of relief pilot on international flights. Relief pilots will receive $70 monthly in addition to their regular co-pilot's salary.

Ratification of the 1948 labor agreement between American Airlines and the Transport Workers Union of America (CIO) has been completed by the union membership. TWU claims the new pact provides the highest wage rates for mechanics and other ground personnel in the air transport industry.

▶ **General Increase**—Provisions of the agreement, according to TWU, include a general increase of 16 cents an hour, of which 10 cents is retroactive to July 1, 1947. The full 16-cent raise was to become effective Jan. 1.

The American Airlines pact also included provisions for an additional paid holiday, making a total of seven per year; sick leave with accrual up to 30 days; retention of two weeks vacation after one year and granting of three weeks paid vacation after 14 years; and reduction of the probationary period to three months. This year's agreement carries over the 1947 provisions with respect to shift premiums, time and one-half and double overtime, and other rules and working conditions.

A partial list of new hourly wages shows: inspector (first year) $2, thereafter $2.06; lead mechanic (first year) $1.88, thereafter $1.94; senior mechanic (first year after one year as mechanic) $1.64-$1.72, thereafter, $1.82; mechanic (first year) $1.50-$1.56, thereafter (as senior mechanic) $1.64; junior mechanic (first year six months) $1.12, after 30 months $1.44; lead cleaner-aircraft (first year) $1.20-$1.26, thereafter $1.34; cleaner-aircraft (first year) 94 cents-$1, thereafter $1.07; senior ground serviceman (first year) $1.38-$1.46, thereafter $1.54; ground serviceman (first year) $1-$1.04, second year $1.12-$1.20, thereafter $1.30.

Air France Survey

A recent Air France travel survey disclosed that half the passengers on its North Atlantic run are American and 30 percent French. Of the total, 55 percent are business men, either in trade (30 percent) or in a branch of industry (25 percent).

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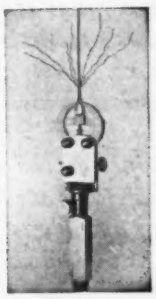

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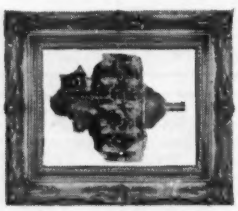

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Praising The CAA Inspector

Some readers will say it was the softening influence of Christmas. Others may recall that on previous occasions this page has been turned over to the views of persons who disagree with us. At least, in addition to being a surprise, the letter reprinted below, praising the majority of CAA inspectors, should be a morale tonic for that beleaguered group.

Although the last editorial on inspectors was printed here several months ago, Capt. Max Balfour, guiding light of Spartan School of Aeronautics at Tulsa, Okla., was still sizzling over it at the recent National Aviation Clinic. We told him to write his comments. They have just arrived.

In our opinion, several of Captain Max's arguments miss the point because he forgets one important fact—that in business life inferior men encounter competition and eventually are eliminated to their own financial loss. CAA officials and employes, however, should be obligated to serve the public, who pay their salaries. Inferior public servants, we think, are too often protected from this competition and penalties for mediocrity by outmoded Civil Service regulations and by stupid bureaucracy.

We have a quaint philosophy that the public can demand fair return for what it finances. We have faith in the fair mindedness of the majority. If government fails to make the proper changes the fair-minded majority demand, it is up to that fair-minded public to squawk, and loudly. This, undoubtedly, was behind the UPMA proposal to keep a file of complaints sent in about CAA inspectors by its thousands of members who are mechanics, plane owners and pilots, and fixed base operators.

Widespread complaints about a few inspectors, citing specific instances, are enlightening, and furnish a basis for reporting to CAA public servants accused by the taxpayers. Furthermore, this method makes it difficult for CAA to hide the extent of complaints and any failure to follow them up. We think any independent clearing house of spontaneous public opinion on CAA or any other publicly supported agency is a useful instrument of democracy. Thus, we upheld UPMA's proposal, and still do.

T. P. Wright has made progress in his CAA cleanup and reorganizations, including improvements in the inspection service. But we cannot go as far as Captain Balfour. Nevertheless, both sides deserve a hearing, and competent public servants are also deserving of a pat on the back.

Following is Captain Balfour's letter, and his own nominations for meritorious citation:

I am a regular and faithful reader of your editorials. They are timely, interesting and based on good fact finding, but the one on "Keeping CAA Inspectors In Line," seems to me to be an exception. You went overboard for James Batchelor's paragraph in his United Pilots & Mechanics Bulletin. I like Jim and admire his efforts. But I don't think that either of you were writing to the majority of fair-minded people in this business. I get around a lot and hear a lot from others in the business. I have rarely heard a complaint about a CAA inspector and, when I did, I wasn't convinced.

Admitting that we do have some that are not perfect, and after all they are only human, I have always had the impression that CAA inspectors were well chosen, well trained and competent men. I believe they compare very favorably with any group, in or out of the government service. In the nine years I have operated Spartan, I cannot recall a single instance of mistreatment. I do know of scores of instances of sane and fair treatment and many instances where inspectors made special efforts to render rapid service, sometimes with personal inconvenience to themselves.

I believe also that any reasonable complaint taken to a regional administration would be given fair consideration. If that didn't satisfy, I'll bet that Administrator Ted Wright would see personally that the injured party received fair treatment.

Here is what I think is wrong with Jim Batchelor's approach and yours:

1. You create the impression that many CAA inspectors are abusing the public. That is not true. In speaking of a minority why don't you say how many? 49%, 10%, 5%, 1%?

2. You strike at the pride and professional dignity of every inspector on the staff.

3. You say nothing about the provocation these men can and do suffer from another minority that stays up nights trying to figure how it can beat the law. Why doesn't Batchelor at the same time set up a card file of unethical operators, mechanics who do poor work, and pilots who deliberately violate the regulations, and others who are opposed to any and all CAA men? Another minority, I am sure.

4. You propose and endorse a system of squealing that is contrary to democratic principles, the idea of fair play, and the golden rule. What ethical right has UPMA to maintain such a blacklist?

5. Nothing is said about hearing the inspector's side of the story. Even if the inspectors could talk, is UPMA a competent agency to consider evidence and render judgment?

I think the approach should be from the opposite direction. If names are to be named, let's hear about the good men, the ones who have worked quietly and faithfully to foster aviation and have shown good judgment and tact in their dealings with a group that is made up of many fine people and also a small minority that is not so good. Long ago I was told that "you can catch more flies with sugar than with vinegar." If you will give recognition to the good men in CAA, and Jim admits they are the majority, the rest probably will want to get on your list. If they don't appear, a lot of good people can wonder why. Here are a few. These are some of the men in CAA we at Spartan appreciate for their fairness, their cooperation and their devotion to duty. We probably have forgotten some; there are so many.

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W. G. Green	William S. Moore	W. H. Weeks
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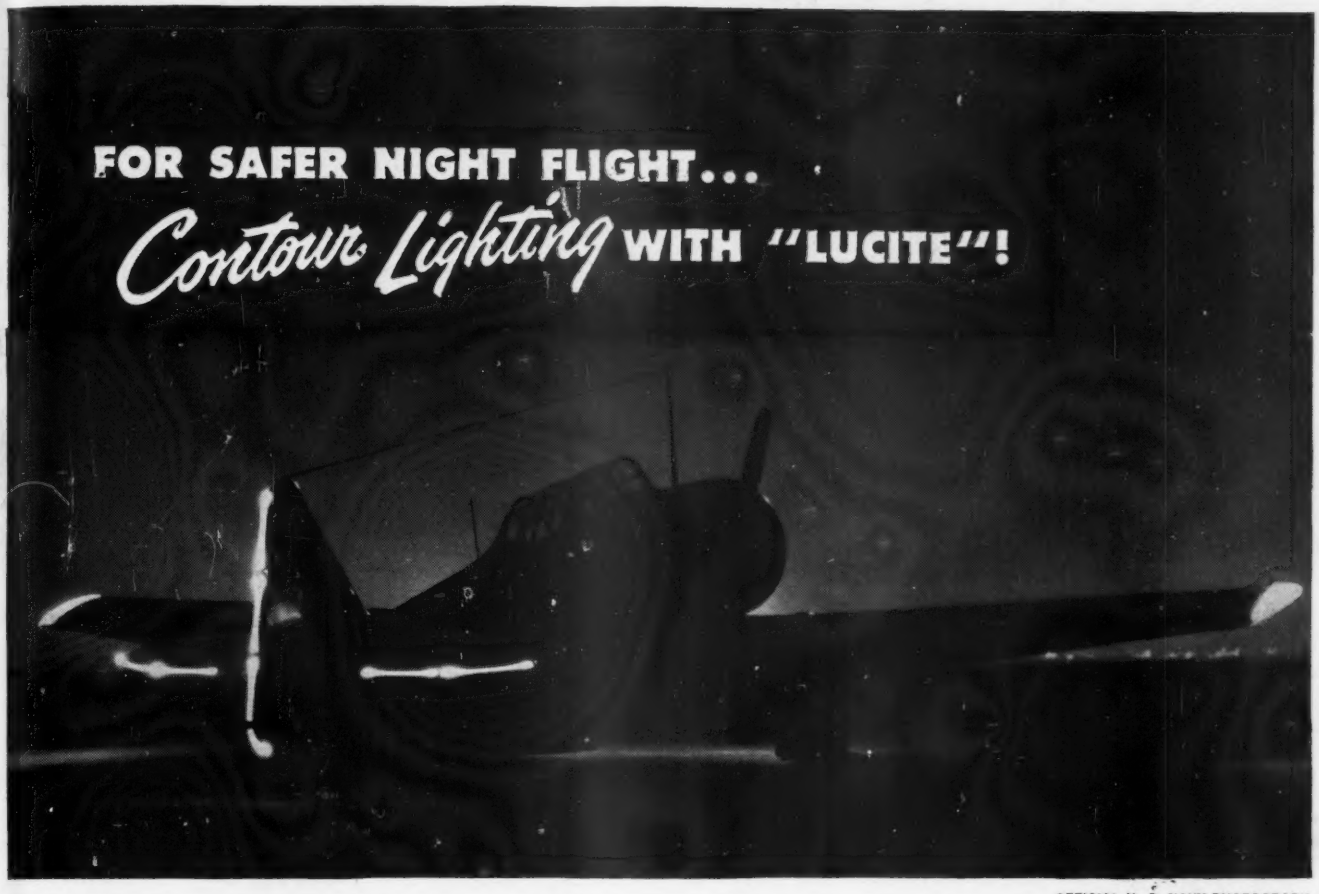
AVIATION WEEK invites letters from fixed base operators and others on Max Balfour's expression, and CAA inspectors in general.

ROBERT H. WOOD



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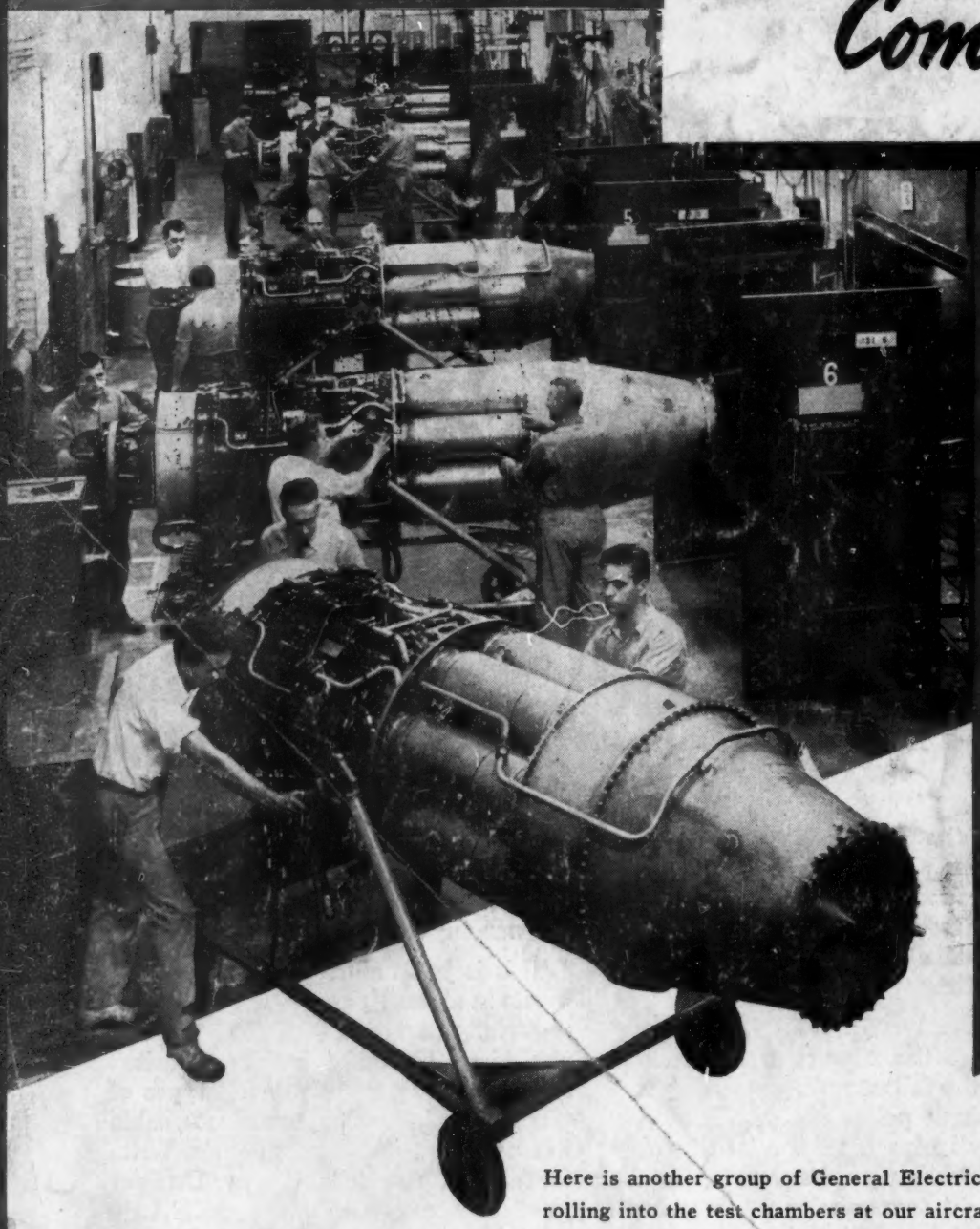

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